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September 11, 2003

File No. 031132-0012

VIA FEDEX

California Energy Commission
Docket Unit, MS-4
Attn: Docket No. 00-AFC-4
1516 Ninth Street
Sacramento, California 95814-5512

Re: Potrero Power Plant Unit 7 Project: CEC Docket No. 00-AFC-4

Dear Sir/ Madam:

Pursuant to California Energy Commission Siting Regulation, sections 1209(c) and 1209.5, enclosed herewith for filing please find the original and 12 copies of Applicant's Responses to CEC Data Requests 216-253 (Sixth Set), SAEJ and OCE Data Requests 1-49 (Third Set), and CBE Data Requests 1-68 (Second Set), on the Cooling Tower System Amendment to Application for Certification (00-AFC-4), Potrero Power Plant Unit 7 Project.

Very truly yours,



Dale Valadez
Secretary to Michael J. Carroll

Enclosures

STATE OF CALIFORNIA

Energy Resources
Conservation and Development Commission

In the Matter of:) Docket No. 00-AFC-4
)
Application for Certification,)
for the POTRERO POWER PLANT) **PROOF OF SERVICE**
UNIT 7 PROJECT) [REVISED 09/11/03]
by Mirant Potrero LLC)
)

I, Dale Valadez, declare that on September 11, 2003, I distributed copies of the attached:

**RESPONSES TO CEC DATA REQUESTS 216-253 (SIXTH SET), SAEJ
AND OCE DATA REQUESTS 1-49 (THIRD SET), AND CBE DATA
REQUESTS 1-68 (SECOND SET), ON THE COOLING TOWER SYSTEM
AMENDMENT TO APPLICATION FOR CERTIFICATION (00-AFC-4),
POTRERO POWER PLANT UNIT 7 PROJECT**

- ☒ Via electronic transmission (e-mail) and by depositing copies with FedEx overnight mail delivery service at Costa Mesa, California with delivery fees thereon fully prepaid and addressed to the following:

DOCKET UNIT

California Energy Commission
Docket Unit, MS-4
Attn: Docket No. 00-AFC-4
1516 Ninth Street
Sacramento, CA 95814-5512
docket@energy.state.ca.us

- ☒ by depositing copies in the United States mail at Costa Mesa, California with First Class postage thereon fully prepaid and addressed to the following:

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POTRERO POWER PLANT UNIT 7 PROJECT
CEC Docket No. 00-AFC-4

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POTRERO POWER PLANT UNIT 7 PROJECT
CEC Docket No. 00-AFC-4

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I declare under penalty of perjury that the foregoing is true and correct.


Dale Valadez

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**Responses to CEC Data Requests 216-253 (Sixth Set),
SAEJ and OCE Data Requests 1-49 (Third Set),
and CBE Data Requests 1-68 (Second Set)**

COOLING TOWER SYSTEM AMENDMENT

Application for Certification (00-AFC-4) for Potrero Power Plant Unit 7 Project

September 2003

Prepared for:



Prepared by:

URS



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**Responses to California Energy Commission
Data Requests 216-253 (Sixth Set)**

BACKGROUND [216 and 217]

Two sugar warehouses that have been evaluated as eligible under criterion 1 for the California Register of Historical Resources are located directly across 23rd Street from the proposed cooling tower location. This area of the power plant across 23rd Street from the sugar warehouses currently contains some small, low rise buildings within a paved parking area and the existing Station A. Station A includes a boiler room and turbine or generator room that are 65 feet tall, 121 feet wide and 434 feet long oriented in a north south direction, perpendicular to the proposed cooling tower. Under the Once Through Cooling Option analyzed in the AFC and FSA, this area would have remained relatively unchanged except for the removal of Station A. However, in the Cooling Tower Option now being considered, a tower structure 69 feet tall and 673 feet long would be built parallel with and 30 feet north of the property line along 23rd Street. The Amendment states that the analysis in the AFC was used “to determine the potential effects of the cooling tower system project on the two warehouses” and that the design of the cooling tower is of a scale that is consistent with the existing structures of the plant and neighboring industrial development. The analysis in the AFC included the planned retention of the few low-rise buildings on the power plant property north of the warehouses and did not discuss the construction of the large cooling tower structure. In addition, the cooling tower would produce a visible plume 6.2 percent of the time. Staff needs additional information before it can agree with the applicant’s conclusion that “the design of the cooling tower is of a scale that is consistent with the existing structures of the plant and neighboring industrial development and thus would not materially impair the physical characteristics that convey the significance of the two warehouses at 435 23rd Street.”

DATA REQUEST

216. *Please provide a detailed discussion by a qualified architectural historian of the changes in integrity of setting, feeling and association for the sugar warehouses that would result from construction and operation of the cooling tower as part of the proposed project, including whether the changes in integrity would materially impair the characteristics that convey the significance of the two warehouses.*

RESPONSE

The construction of the cooling tower system, to be located north across 23rd Street from the two sugar warehouses, would have no adverse effect on the characteristics that qualify the property for inclusion in the California Register. The architectural resources were evaluated as eligible for the California Register under Criterion 1, at the local level of significance, as the last structures remaining from the Western Sugar Refinery. As such, they represent the once powerful sugar industry in San Francisco, and the only sugar company with San Francisco refinery operations.

The period of significance for the warehouse buildings dates from their period of construction in 1923 and 1929 through 1948, when the Western Sugar Refinery ceased its operations in San Francisco. When in operation, the sugar company complex consisted of numerous nineteenth and twentieth century buildings covering a site that was over four blocks long from east to west, and two blocks wide from north to south. By 1950, at least 16 buildings, two large water tanks, a fuel tank, wharves, railspurs, and roadways remained on the property. The buildings were all connected by abutting walls and passages, or via overhead bridges and conveyors. Buildings

included a nine-story brick structure, a seven-story brick melt wash house, a five-story brick melt filter house, seven large one-story wood raw sugar warehouses, the covered East Wharf and Raw Sugar Dock, a two-story brick refined sugar warehouse (all pre-1914), a 1915 ten-story reinforced-concrete building, and the two 1923 and 1929 steel and concrete warehouses. Except for the ten-story concrete building and the two concrete warehouses, all of the buildings were demolished in 1950.

The demolition of the majority of the buildings in the sugar refinery complex in 1950 resulted in the loss of integrity of setting and feeling for the two warehouses at 435 23rd Street. Their integrity of setting and feeling was further diminished by the construction of the PG&E power plant in the mid-1960s on the site of the former Western Sugar Refinery and the demolition of the ten-story refinery building, located north of the warehouses on the PG&E site, by the City in the 1980s.

By the early 1900s, the San Francisco Gas and Electric Company had erected two large gas storage tanks and other facilities on the site west of the Station A Power Plant, the area now occupied by the electrical switchyard. Some of the of the steam plant and gas manufacturing plant buildings were demolished by the 1960s, and the gas holders were removed prior to 1987. In the 1960s, a 305-foot stack and adjacent multi-story Unit 3 were erected by PG&E north across 23rd Street from the 1923 sugar warehouse, forever altering its integrity of setting, feeling, and association. In addition, a large portion of the historic Station A building was demolished and a modern switchyard was constructed.

Thus, the historical setting, feeling and association of the buildings, as well as the physical landscape, has changed since their 1923/1929-1948 period of significance. The buildings were evaluated in 2001 and determined to be eligible for the California Register as the last remaining structures associated with the Western Sugar Refinery, not for their superiority of architectural design. The construction of the Cooling Tower System, a tower structure 69 feet tall and 673 feet long parallel with 23rd Street, is but one of many alterations that have occurred on the property in a continuous cycle of change. The physical characteristics of the 435 23rd Street warehouses will remain significant for their association with the Western Sugar Refinery, and will retain their integrity of location, design, materials, and workmanship. The new construction, although an effect, would not have an adverse impact because of the previous effects.

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DATA REQUEST

217. *If the significance of the two warehouses would be materially impaired, please provide mitigation measures and indicate whether the mitigation measures would reduce the impact to less than significant.*

RESPONSE

As the significance of the two warehouses would not be materially impaired, no mitigation measures are proposed.

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BACKGROUND [218 and 219]

During the hearings for the Potrero Power Plant, the City and County of San Francisco provided background documents for the Central Waterfront Cultural Resources Survey. The survey suggested that an eligible Central Waterfront Industrial District exists within the survey boundary of Sixteenth Street, Interstate 280, Islais Creek Channel and San Francisco Bay. The Central Waterfront Industrial District includes the Pier 70 Historic District, the Dogpatch Historic District, and some buildings within the Potrero Power Plant parcel and the Spreckels Sugar Warehouses. The addition of the cooling tower would effectively segregate the area between 22nd, Illinois, and 23rd with large structures (tanks, substation and switching yard, power plants and cooling towers) that are modern intrusions into the middle of the district.



DATA REQUEST

218. *Please provide a detailed discussion by a qualified architectural historian of the changes in Central Waterfront Industrial District that would result from construction and operation of the cooling tower as part of the proposed project, including whether the changes in integrity would materially impair the characteristics that convey the significance of the district.*

RESPONSE

The proposed Central Waterfront Industrial District has never been submitted to the State Office of Historic Preservation for concurrence, and no historic record (DPR 523) forms have been submitted. Therefore, the district has not been determined eligible for the California Register. The proposed Union Iron Works/Pier 70 Historic District and Dogpatch Historic District appear to be eligible for listing on the California Register as districts.

While the architectural resources located on the Potrero Power Plant parcel and the Spreckels Sugar Warehouses appear to be eligible as individual properties, as they are not contiguous with the proposed Union Iron Works/Pier 70 and Dogpatch districts. The Union Iron Works/Pier 70 district is separated from the Potrero Power Plant historic architectural resources by three large circular storage tanks, the 305-foot stack, the Unit 3 structure, and the electrical switch yard. The only buildings remaining at the Potrero Power Plant from its period of significance (1903-1948) are the remaining portion of the Station A building, the meter house, and compressor house.

The proposed Dogpatch Historic District is separated from the Potrero Power Plant parcel by the two-block-long, one-block-wide, and five-story-high American Industrial Center, constructed ca. 1955. This immense structure, which is located between 22nd and 23rd streets, and Illinois and Third streets, separates the proposed districts by a vast physical and visual barrier, thus effectively dividing the concentrations of historical resources.

The Western Sugar Refinery Warehouses at 435 23rd Street are separated from the proposed Dogpatch district by the American Industrial Center (noted above) and the post-1959 construction of the buildings on the west portion of the original sugar refinery complex property. They are also separated from the Union Iron Works/Pier 70 district by the historic Potrero Power

Plant facilities, as well as by the modern 305-foot stack, Unit 3 structure, and several modern metal industrial buildings and smaller structures.

As noted in the National Register Bulletin for Defining Boundaries for a Proposed Historic District, the boundaries should define the limits of the eligible resources, usually including the immediate surroundings, and encompass the appropriate setting. Areas that have lost integrity because of changes in cultural features or setting should be excluded when they are at the periphery of the eligible resources. Districts may include noncontributing resources, but in situations where historically associated resources are geographically separated from each other by intervening development and are separated by large areas lacking eligible resources, a discontinuous district may be defined (U.S. Department of the Interior National Register Bulletin 21:2).

In the case of the proposed Central Waterfront Industrial District, however, the majority of the properties within its proposed boundaries are lacking in integrity of setting, feeling and association. Numerous post-1957 buildings and structures have been constructed within the proposed boundaries, including concrete batch plants, warehouses, towers and cranes associated with the waterfront operations, and the Omni Terminal. In addition, a great many non-conforming buildings have recently been erected, including a modern three-story building on the corner of Third Street and Cesar Chavez Street, and several apartment buildings on Mariposa, 19th, and Third streets. Many buildings and structures have also been demolished in recent years, resulting in a patchwork of vacant lots and blocks. New construction and alterations to the resources and their setting have compromised its integrity. The essential qualities that contribute to the district's significance have not been preserved.

Historical districts consist of a significant concentration or continuity of associated historical resources. Although many of the resources within the district retain enough of their historic character or appearance to be recognizable as historical resources and to convey the reasons for their significance, the district as a whole is lacking in integrity. The Union Iron Works/Pier 70 Historic District and the Dogpatch Historic District appear to be eligible as historic districts, but the proposed Central Waterfront Industrial District does not retain the authenticity of its physical identity evidenced by survival of characteristics that existed during its period of significance.

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DATA REQUEST

219. *If the significance of the Central Waterfront Industrial District would be materially impaired, please provide mitigation measures and indicate whether the mitigation measures would reduce the impact to less than significant.*

RESPONSE

As the proposed Central Waterfront Industrial District does not retain enough integrity to its period of significance to be considered eligible for the California Register, no mitigation measures are proposed.

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BACKGROUND [220]

Although no archeological resources were identified as a result of the records search and field survey performed by the applicant for the pipeline routes needed for the Cooling Tower Option, it should be possible to identify potential subsurface resources that could be impacted by the pipeline construction. The 1899 Sanborn map suggests that portions of the pipeline would be placed in old land features, shoreline areas, and filled areas. Historical research and historic maps may indicate the locations of archeological resources along the pipeline route. An example of such a resource that could be impacted by the proposed pipeline is the San Francisco Cordage/Tubbs Cordage ropewalk that appears on historic maps and is documented in several area historical resources inventories. In order to adequately identify potential impacts, staff needs additional information.

DATA REQUEST

- 220. Please provide a literature review and consult historic maps to identify potential subsurface cultural resources that could be impacted by the proposed pipelines. The literature review should include, but not be limited to, the following:**

Potrero 7: Phase 1 Cultural Resources Overview and Inventory (Wirth Associates 1979);

Central Waterfront Cultural Resources Survey (San Francisco Planning Department 2001); and

Dogpatch Historic District Survey (Christopher VerPlanck 2001).

RESPONSE

Project implementation could result in the inadvertent exposure of previously unidentified archaeological resources. The discovery and treatment of such resources for both the new generating facility and route of the underground transmission interconnection were addressed within the original AFC (Dames & Moore, 2000) and the Archaeological Research Design and Treatment Plan, Potrero Power Plant Unit 7 Project (URS 2001). Below, a discussion of the potential subsurface archaeological resources along the route of the upland cooling system pipeline is presented.

Prehistoric Resources

The Potrero Project APE is situated within lands occupied during the ethnographic period by speakers of *Ramaytush* or San Francisco Costanoan, a linguistic division associated with the Utian Family language and the larger Penutian Linguistic Stock (Kroeber 1976; Levy 1978; Moratto 1984; Shipley 1978). An overview of Costanoan lifeways is presented in Section 8.3.1.3 *Ethnographic Background* of the original AFC (Dames & Moore, 2000:8.3-6). Similarly, an overview of the prehistory of the region is presented in Section 8.3.1.2 *Prehistoric Background* of the same document (Dames & Moore 2000:8.3-4).

Although prehistoric archaeological sites have been identified along the City of San Francisco's bay shore, none of these occur within the project area. Lying in close proximity, however, are Hunters Point and the pre-reclamation course of Islais Creek, both of which were focal points for

prehistoric human activities as evidenced by clusters of identified sites at these locations. In addition, Potrero Point, though lacking documented prehistoric sites, may have attracted Native Americans given its bayside location.

Much of the route of the proposed upland cooling system pipeline, however, would be situated on lands reclaimed from San Francisco Bay. Specifically, the route from 26th Street southward would be placed within soils deposited during nineteenth and twentieth century reclamation efforts (Figures 220-1 through 220-4). It is unlikely, therefore, that buried prehistoric cultural resources would be found in these locales. It should be further noted that between the intersection of Cesar Chavez Street and Indiana Street southward to the intersection of Davidson and Rankin streets (a distance of 2,500 feet), the pipeline would be placed within an existing box culvert. As such, no new excavation would be necessary, and there would be no potential to encounter archaeological resources along that particular section.

The portion of the pipeline from the Potrero Power Plant southward to 26th Street is to be placed within deposits comprised primarily of native (i.e., non-fill) soils. Although extensive urban development exists along this section of the proposed pipeline corridor, it is possible that buried prehistoric cultural resources could be encountered in this area. Based upon the archaeological literature for the San Francisco Bay region, and prehistoric site types identified for the nearby Tar Flat, Rincon Hill area (Alvarez 1993), four property types may be anticipated. These are: (1) occupation sites that may contain diversified artifact assemblages of organic and lithic materials, cultural features, organic remains, and possibly human remains; (2) shellmounds, representing refuse sites associated with the collection and processing of marine food and material resources; (3) lithic sites consisting solely of, or dominated by, lithic material reflecting task-specific site use for tool manufacturing, resource procurement and/or processing, and/or ritual or ceremonial activities; and (4) human burial sites consisting of skeletal remains or evidence of mortuary practices. All of these site types would likely represent significant archaeological resources if present (Alvarez 1993:243-245).

Historic Resources

The history of the San Francisco Bay area dates back to some of the earliest Spanish exploration of the west coast of North America, culminating in the discovery of gold in California and the unprecedented growth of San Francisco from a small frontier settlement to a major urban center. This development is documented in detail in Section 8.3.1.4 *Historical Background* of the AFC (Dames & Moore 2000). Below, we summarize those aspects of the historical development of the route of the upland cooling system pipeline that may have left behind material remains that could potentially be encountered during project activities.

It should be noted that much of the length of the pipeline would be placed within existing city streets. Where the route would not be placed within an existing street (i.e., the section between Cesar Chavez and Davidson streets), the pipeline would be placed within an existing box culvert and therefore the potential for encountering buried archaeological resources would not be an issue. The placement of the pipeline within existing city streets is important with respect to encountering buried historic archaeological resources. With the exception of the various pre-reclamation historic features discussed below and in the AFC (Dames & Moore, 2000) and research design (URS 2001), subsequent development bordered the streets down which the pipeline would be placed (Sanborn 1886, 1900, 1914, 1919, 1929, 1950; USCGS 1931/1932).

As such, it would appear unlikely that in situ remains associated with this post-reclamation development would be encountered within the road prisms.

Potrero Point

The route of the underground pipeline upon leaving the plant would follow the 24th Street alignment westward for a distance of three blocks to Minnesota Street. Along this section, the route appears to be situated within fill between Illinois and Third streets and then upon native soils westward to Minnesota Street. The change from fill to native soils represents the undulating, southern edge of Potrero Point that ultimately transitions into the mainland at approximately Third Street (Figure 220-3).

Prior to the reclamation efforts initiated in the latter half of the nineteenth century, Potrero Point extended from just south of 24th Street to 23rd Street and east to Delaware Street (USCS 1852). Beginning in the 1860s and continuing through the 1940s, the waters surrounding Potrero Point were reclaimed, ultimately obscuring any resemblance of the “point” that once extended into the bay. Potential historic archaeological resources within the Potrero Power Plant property were addressed in an archaeological research design (URS 2001) previously submitted to the CEC.

Archival research reveals that at the point where the southern edge of Potrero Point joined the mainland (intersection of Third and 24th streets), two potential historic resources could be encountered during placement of the upland cooling system pipeline. Within this general location, the proposed pipeline corridor bisects the former alignments of both the Potrero and Bay View Railroad, and a ropewalk associated with the Tubbs Cordage Company (Figure 220-2).

Tubbs Cordage Company Ropewalk

The San Francisco Cordage Manufactory was constructed by Alfred and Hiram Tubbs in 1856 on the block bounded by present day Indiana, Tennessee, Tubbs, and 22nd streets. Subsequently renamed the Tubbs Cordage Company, the facility included a ropewalk which at its longest reached a length of over 1,500 feet. Over much of its length, the ropewalk rested on piers just above the waters of Islais Creek Cove. A ropewalk consists of a long narrow building where strands of yarn were manually twisted into ropes. Ropes manufactured in this process were considered superior to those manufactured in the then newly invented machine twisting process. Ropes manufactured at the Tubbs facility were used throughout California's burgeoning shipping and mining industries (Wirth Associates 1979a:6-8, 96; 1979b:36-37).

Potrero and Bay View Railroad

In 1865, a transportation artery providing a direct connection between the City proper and the previously isolated areas on Potrero, Hunters, and Candlestick points was constructed. The Potrero and Bay View Railroad (PBVRR) extended from the northern shore of Mission Bay southward to the Bay View Racetrack. Much of the line was built atop trestles, including two that crossed Mission Bay (Long Bridge) and Islais Creek Cove (Third Street Trestle). The trestle within the vicinity of the pipeline alignment crossed over the ropewalk discussed above. A set of double tracks was laid along the route, allowing for two-way traffic that at this time was comprised of horse-drawn streetcars (Dow 1973:125; Olmsted et al. 1977:37-40; Wirth Associates 1979a:98; Wirth Associates 1979b:37).

The construction of the PBVRR, in particular the Long Bridge and Third Street Trestle, mark the beginning of the encircling and ultimately reclamation of Mission Bay and Islais Creek Cove. Although these two bodies of water were eventually reclaimed, including areas bayward (i.e., east) of Long Bridge and the Third Street Trestle, the route of the PBVRR is still identifiable, being the alignment of present day Third Street.

Remnants of either of the ropewalk or PBVRR trestle would likely consist of structural remains, perhaps with piles occurring in situ. Such remains could represent significant archaeological resources; however, piles alone may not warrant further management (Olmsted et al. 1977:112-113). It should be noted herein, that a 12-foot-deep trench excavated by Wirth Associates (1979b) adjacent to the intersection of Third and 23rd streets failed to identify either of these potential historic archaeological resources.

Islais Creek Cove

Once extending southward along the Minnesota Street alignment, the proposed pipeline reenters soils deposited during reclamation efforts. Prior to the reclamation efforts of the late nineteenth and early twentieth centuries, the waters of Islais Creek emptied into a small bight (herein referred to as Islais Creek Cove) that extended roughly from the southern edge of Potrero Point southwards to an unnamed point of land located in the vicinity of the intersection of today's Evans Avenue and Newhall Street. The western (i.e., inland) extent of the bay is difficult to define as there is no clear demarcation between open waters and the morass of sloughs and marshlands once located at the mouth of Islais Creek (Figures 220-2 and 220-3). Details concerning the reclamation of Islais Creek Cove were presented in the archaeological research design (URS 2001) referenced previously. It is possible that submerged vessels could be encountered anywhere within these reclaimed soils. The discovery of submerged vessels was discussed within the research design previously submitted to the CEC (URS 2001).

At about the point where 25th Street intersects Minnesota Street, the pipeline route bisects the location of an unidentified, eastward extending wharf depicted on the USCS map of the San Francisco Peninsula (ca. 1869) (Figure 220-2). The 25th Street alignment is also the corridor followed by the tracks connecting to the Western Pacific Railroad (WPRR) jetty. The WPRR jetty was discussed in the archaeological research design (URS 2001).

It is unknown whether the unidentified wharf had structures atop its surface. If so, remnants of these structures or their contents, if encountered, would likely represent significant archaeological resources. If no structures occurred on the wharf, potential resources associated with this feature would likely be limited to structural remains. If confined to piles, such a discovery may not represent a significant resource (Olmsted et al. 1977:112-113).

South of 25th Street the route of the pipeline is confined to fill soils. As discussed previously, between the intersection of Cesar Chavez Street and Indiana Street southward to the intersection of Davidson and Rankin streets, the pipeline would be placed within an existing box culvert. The potential of encountering buried archaeological deposits is therefore eliminated along much of this stretch.

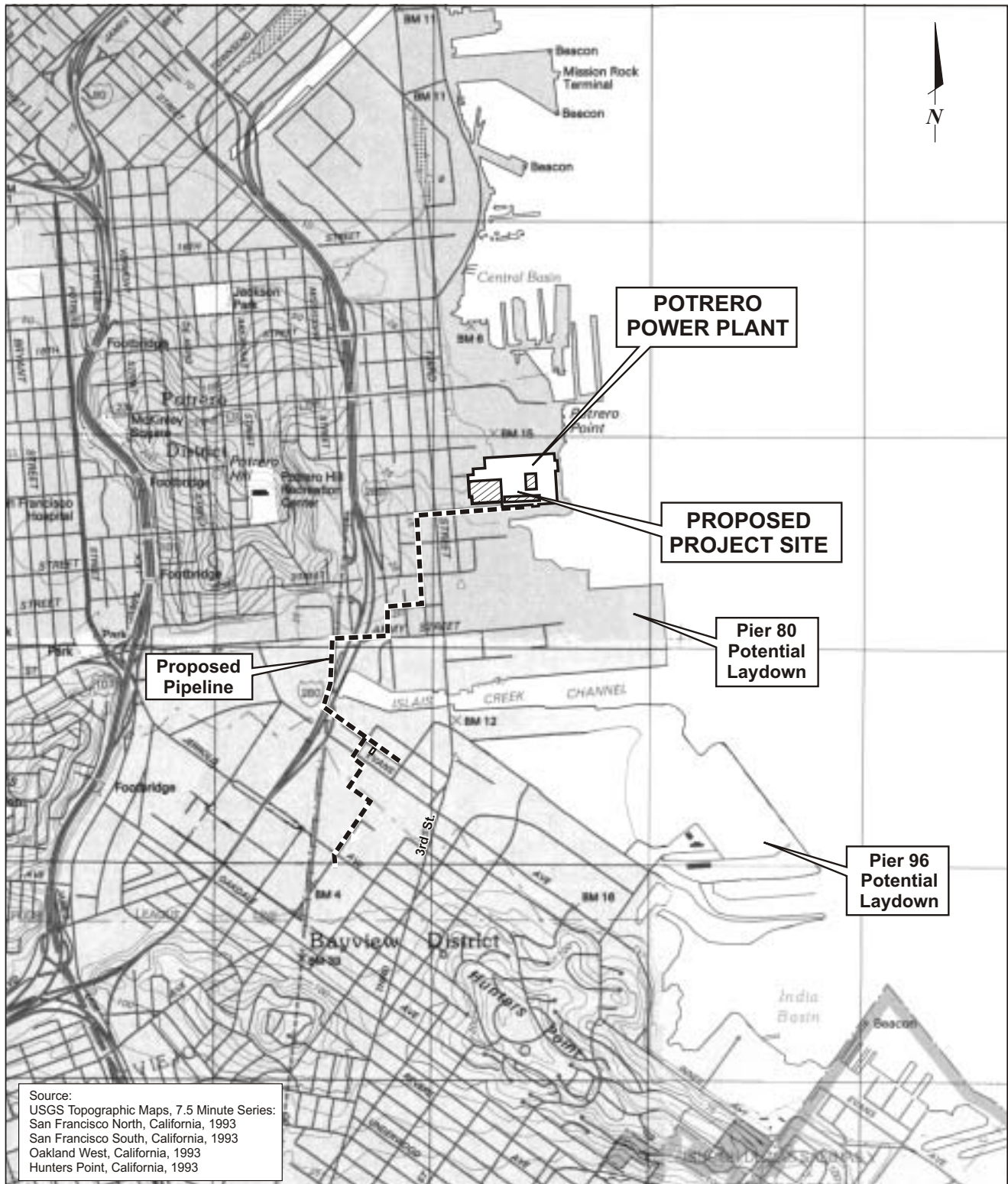
Lastly, along Davidson Street southeast of the intersection with Rankin Street to the point where the line ultimately terminates, the route bisects the area where Butchertown was once located. Butchertown was addressed in the archaeological research design (URS 2001).

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- 1979b. Potrero 7: Phase II Archaeological Test Excavations. Submitted to Pacific Gas and Electric Company, San Francisco.

◇◇◇



0 2000 4000
 Scale in Feet
 1:24,000

CULTURAL RESOURCES AREA OF POTENTIAL EFFECT

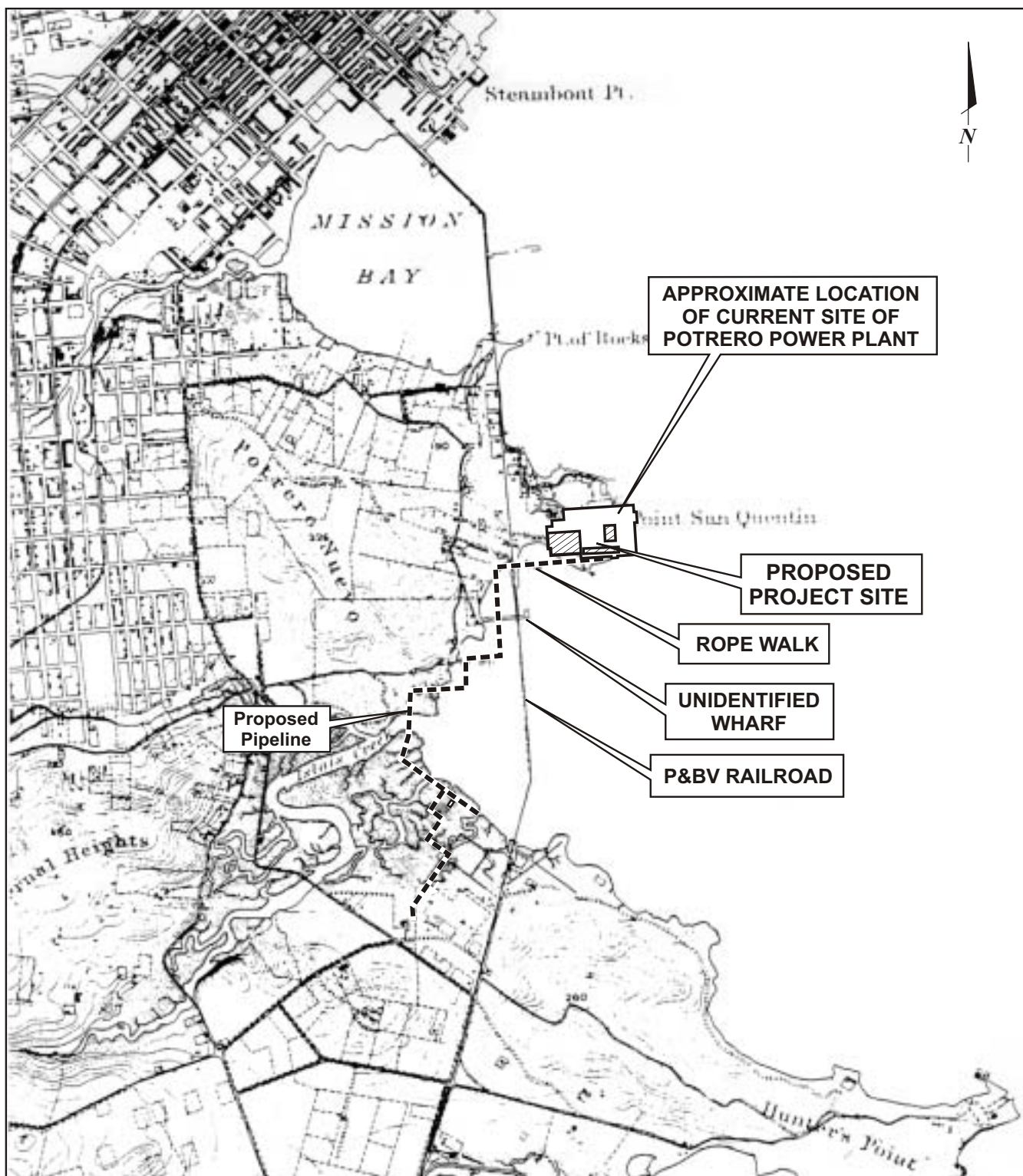
Cooling Tower System Amendment
 Potrero Power Plant Unit 7 Project

September 2003
 28066648

Mirant Potrero LLC
 San Francisco, California

URS

CEC FIGURE 220-1



SOURCE:
USCS San Francisco Peninsula, North Point to Visitacion Point 1869

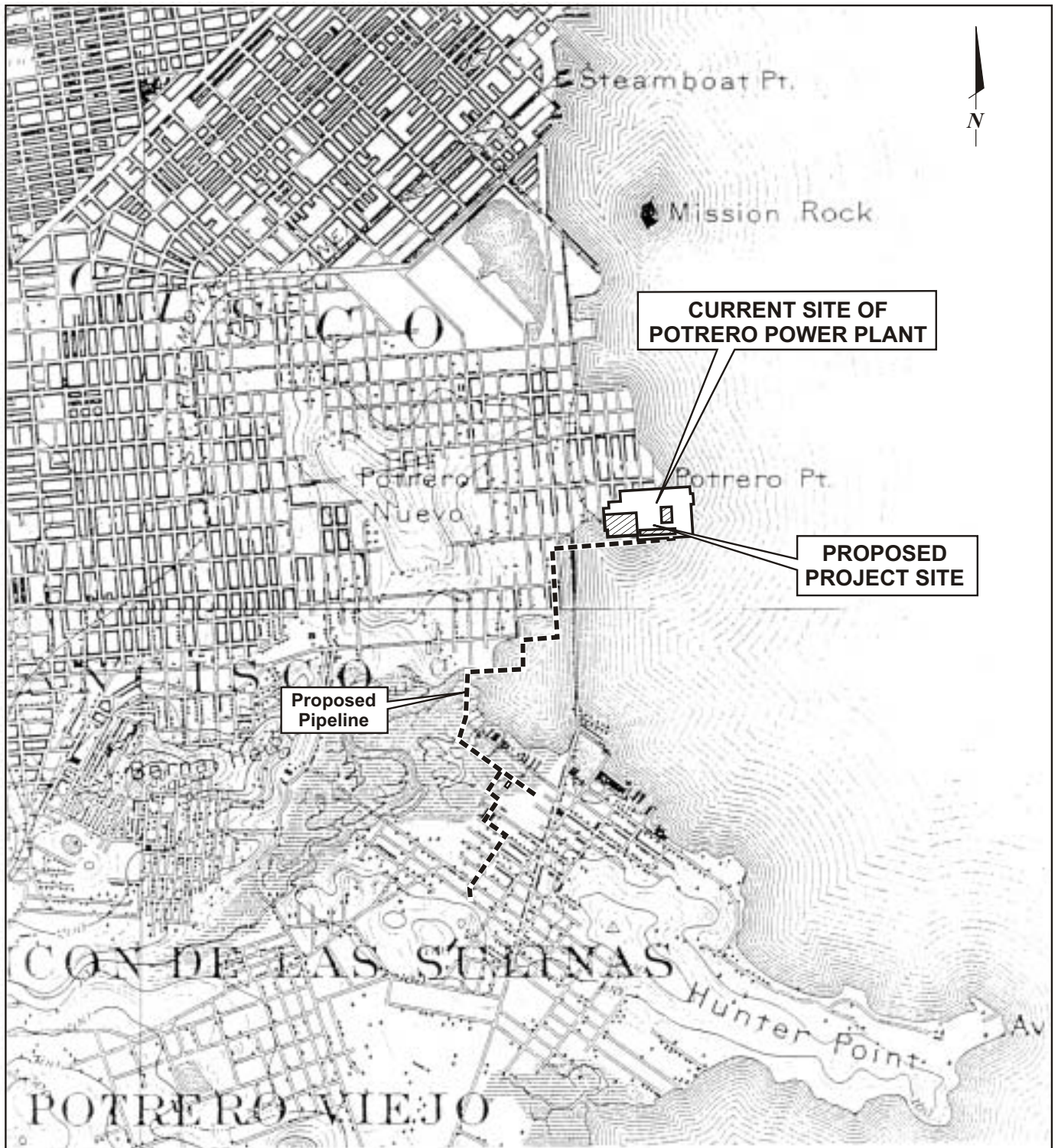
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Scale in Feet
1:24,000

SAN FRANCISCO SOUTHERN WATERFRONT CIRCA 1869

Cooling Tower System Amendment
Potrero Power Plant Unit 7 Project
Mirant Potrero LLC
September 2003
28066648
San Francisco, California

URS

CEC FIGURE 220-2



SOURCE:
USGS San Francisco, Calif., 15' Quadrangle, 1895 and
USGS San Mateo, Calif., 15' Quadrangle, 1896

0 2000 4000
Scale in Feet
1:24,000

SAN FRANCISCO SOUTHERN WATERFRONT CIRCA 1895-1896

September 2003
28066648

Cooling Tower System Amendment
Potrero Power Plant Unit 7 Project
Mirant Potrero LLC
San Francisco, California

URS

CEC FIGURE 220-3



SOURCE:
USGS San Francisco, Calif., 15' Quadrangle, 1915 and
USGS San Mateo, Calif., 15' Quadrangle, 1915

0 2000 4000
Scale in Feet
1:24,000

SAN FRANCISCO SOUTHERN WATERFRONT CIRCA 1915

September 2003
28066648

Cooling Tower System Amendment
Potrero Power Plant Unit 7 Project
Mirant Potrero LLC
San Francisco, California

URS

CEC FIGURE 220-4

BACKGROUND [221]

In the AFC, it is stated that at full load the total average capacity of the plant will be approximately 540 net MW at a heat rate of less than 7,000 Btu per KWhr (SECAL 2000a, AFC § 1.4). The varying temperatures and humidity of the site location will affect the efficiency of the wet/dry cooling tower system that will ultimately affect the total efficiency of the power plant. The efficiency of the wet/dry cooling tower system will be affected by the varying weather conditions more than the once-through cooling system.

DATA REQUEST

221. Please discuss the impact of the upland cooling tower system (wet/dry plume-abated cooling tower) on the efficiency of the plant at typical weather conditions for the project site. Please also include a comparison between the once-through cooling system and the wet/dry cooling tower system.

RESPONSE

The upland cooling tower system would decrease the efficiency of the plant, compared to the once-through system. The efficiency drop is due to a loss in LP turbine efficiency, as a result of operating the LP turbine at a higher back pressure, and to an increase in the auxiliary power requirements associated with the operation of a wet/dry cooling tower system. The table below shows the percentage increase in heat rate (meaning a decrease in efficiency) relative to the once-through case.

Heat Rate (HR) Comparison Table at Full Load Operation

Condition	% Increase in HR relative to Once-Through System
Summer (80°F ambient air, 40% relative humidity, 59.1°F Bay Water)	1.3%
ISO (59°F, 60% relative humidity, 59.1°F Bay Water)	0.7%
Winter (35°F, 50% relative humidity, 44.1°F Bay Water)	0.8%
HR = heat rate	

◇◇◇

BACKGROUND [222 and 223]

Specific information on the chemicals stored and/or used on site for the hybrid cooling option and the frequency of their delivery is needed in order to assess the impacts of the hybrid cooling option from a hazardous materials management perspective.

DATA REQUEST

222. On page 2-2 of the July 2003 Cooling Tower System Amendment, it is stated that a wet-dry plume abated cooling tower system would include the following item as a major component:

“Scale and corrosion inhibitor chemical feed system, including storage tank, pumps, and pipes.”

Please provide the identity of all chemicals which are proposed for use in controlling scale and corrosion, their CAS numbers, the amount to be stored on-site, and a MSDS for each chemical.

RESPONSE

The chemicals used for scale and corrosion control would be the same chemicals that are used successfully in thousands of other cooling tower installations. Attached is information for Depositrol BL5323 and FloGard MS6206. The specific chemical supplier for the new facility would not be selected until the facility nears completion. However, these chemicals are typical of what would be used.

Depositrol BL5323 is a dispersant that is used to prevent fouling in the circulating water system. FloGard MS6206 is a phosphate-containing product that is used for general corrosion protection.

These two chemicals would be stored on site in a dedicated storage tank. It is anticipated that each storage tank will have a capacity of 2,000 gallons. The storage tanks would be located in areas with secondary containment for spill prevention.

Attachments 222-1 through 222-4 are the product sheets and the MSDS sheets for the two chemicals.

◇◇◇

Depositrol® BL5323

Phosphonate/Polymer Blend

- Controls calcium scale
- Disperses iron and silt

DESCRIPTION AND USE

Depositrol® BL5323 is a blend of antifoulants formulated for use in once-through and recirculating cooling water systems. It is designed to be used alone or in conjunction with other cooling water treatments. Depositrol BL5323 chelates and sequesters scale-forming ions to form soluble salts. This antinucleating and dispersing capabilities of the organic agents broaden the solubility, permits oversaturation with respect to calcium carbonate, and aids in controlling scale formation. The product employs a low-molecular-weight polymer which inhibits crystal growth and alters the surface charge of suspended particles.

TREATMENT AND FEEDING REQUIREMENTS

Proper treatment levels for Depositrol BL5323 depend on many factors such as corrosion and scaling potential, and conditions particular to a given installation. This product should be used in accordance with control procedures that BetzDearborn establishes for a specific application.

Depositrol BL5323 may be applied neat (undiluted) or diluted with good quality water in a convenient feed stream.

GENERAL PROPERTIES

Physical properties of Depositrol BL5323 are shown on the Material Safety Data Sheet, a copy of which is available upon request.

PACKAGING INFORMATION

Depositrol BL5323 is a liquid blend available in a wide variety of customized containers and delivery methods. Contact your BetzDearborn representative for details.

STORAGE

Protect from freezing. If this product is frozen during shipment or storage, slight mixing may be required to ensure homogeneity.

SAFETY PRECAUTIONS

A Material Safety Data Sheet containing detailed information about this product is available upon request.

PRICING

F.O.B. Destination. Minimum freight allowed.

... Company Logo

GE Betz, Inc.
4636 Somerton Road
Treviso, PA 19057
Business telephone: (215) 355-3700

Material Safety Data Sheet:

Issue Date: 03-JAN-2002

EMERGENCY TELEPHONE (Health/Accident): (800) 877-1940

1. PRODUCT IDENTIFICATION

PRODUCT NAME:

DEPOSITROL BL5323

PRODUCT APPLICATION AREA:

WATER-BASED CORROSION INHIBITOR/DEPOSIT CONTROL AGENT.

2. COMPOSITION / INFORMATION ON INGREDIENTS

Information for specific product ingredients as required by the U.S. OSHA HAZARD COMMUNICATION STANDARD is listed. Refer to additional sections of this MSDS for our assessment of the potential hazards of this formulation.

HAZARDOUS INGREDIENTS:

OSHA	CHEMICAL NAME
2852 31.4	PHOSPHORIC ACID, 11-HYDROXYETHYLENEBIS (HEPE) Corrosive (eye)

No component is considered to be a carcinogen by the National Toxicology Program, the International Agency for Research on Cancer, or the Occupational Safety and Health Administration at OSHA thresholds for carcinogens.

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

CAUTION

May cause slight irritation to the skin. May cause moderate irritation to the eyes. Mists/aerosols may cause irritation to upper respiratory tract.

DOT Hazard is not applicable.

Emergency Response Guide is not applicable
Odor: Slight; Appearance: Yellow, Liquid

Fire fighters should wear positive pressure self-contained breathing apparatus (full face-piece type). Proper fire-extinguishing media: dry chemical, carbon dioxide, foam or water

POTENTIAL HEALTH EFFECTS

ACUTE SKIN EFFECTS:

Primary route of exposure; May cause slight irritation to the skin.

ACUTE EYE EFFECTS:

May cause moderate irritation to the eyes.

ACUTE RESPIRATORY EFFECTS:

Mists/aerosols may cause irritation to upper respiratory tract.

INGESTION EFFECTS:

May cause slight gastrointestinal irritation.

TARGET ORGANS:

No evidence of potential chronic effects.

MEDICAL CONDITIONS AGGRAVATED:

Not known.

SYMPTOMS OF EXPOSURE:

May cause redness or itching of skin.

4 FIRST AID MEASURES

SKIN CONTACT:

Wash thoroughly with soap and water. Remove contaminated clothing. Get medical attention if irritation develops or persists.

EYE CONTACT:

Remove contact lenses. Hold eyelids apart. Immediately flush eyes with plenty of low-pressure water for at least 15 minutes. Get immediate medical attention.

INHALATION:

If nasal, throat or lung irritation develops - remove to fresh air and get medical attention.

INGESTION:

Do not feed anything by mouth to an unconscious or convulsive victim. Do not induce vomiting. Immediately contact physician. Dilute contents of stomach using 3-4 glasses milk or water.

NOTES TO PHYSICIANS:

No special instructions

5 FIRE FIGHTING MEASURES

FIRE FIGHTING INSTRUCTIONS:

Fire fighters should wear positive pressure self-contained breathing apparatus (full face-piece type).

EXTINGUISHING MEDIA:

dry chemical, carbon dioxide, foam or water

HAZARDOUS DECOMPOSITION PRODUCTS:

Thermal decomposition (destructive fires) yields elemental oxides.

FLASH POINT:

> 200F > 93C P-M(CC)

6 ACCIDENTAL RELEASE MEASURES**PROTECTION AND SPILL CONTAINMENT:**

Ventilate area. Use specified protective equipment. Contain and absorb on absorbent material. Place in waste disposal container. Flush area with water. Wet area may be slippery. Spread sand/grit.

DISPOSAL INSTRUCTIONS:

Water contaminated with this product may be sent to a sanitary sewer treatment facility, in accordance with any local agreement, a permitted waste treatment facility or discharged under a permit. Product as is - incinerate or land dispose in an approved landfill.

7 HANDLING & STORAGE**HANDLING:**

Acidic. Do not mix with alkaline material.

STORAGE:

Keep containers closed when not in use. Do not freeze. If frozen, thaw and mix completely prior to use.

8 EXPOSURE CONTROLS / PERSONAL PROTECTION**EXPOSURE LIMITS****CHEMICAL NAME**

PHOSPHONIC ACID, (1-HYDROXYETHYLIDINE) BIS- (HEDP)

PEL (OSHA): NOT DETERMINED

TLV (ACGIH): NOT DETERMINED

ENGINEERING CONTROLS:

adequate ventilation

PERSONAL PROTECTIVE EQUIPMENT:

Use protective equipment in accordance with 29CFR 1910 Subpart I

RESPIRATORY PROTECTION:

A RESPIRATORY PROTECTION PROGRAM THAT MEETS OSHA'S 29 CFR 1910.134 AND ANSI Z88.2 REQUIREMENTS MUST BE FOLLOWED WHENEVER WORKPLACE CONDITIONS WARRANT A RESPIRATOR'S USE. USE AIR PURIFYING RESPIRATORS WITHIN USE LIMITATIONS ASSOCIATED WITH THE EQUIPMENT OR ELSE USE SUPPLIED AIR-RESPIRATORS. If air-purifying respirator use is appropriate, use a respirator with dust/mist filters.

SKIN PROTECTION:

neoprene gloves-- Wash off after each use. Replace as necessary.

EYE PROTECTION:

splash proof chemical goggles

9 PHYSICAL & CHEMICAL PROPERTIES

Specific Grav. (70F, 21C) 1.256
Freeze Point (F) 25

Vapor Pressure (mmHG) - 18.0
Vapor Density (air=1) < 1.00

Material Safety Data Sheet - DEPOSITROL BL5323

Freeze Point (C)	-4		
Viscosity(cps 70F,21C)	90	% Solubility (water)	100.0
Odor		Slight	
Appearance		Yellow	
Physical State		Liquid	
Flash Point	P-M(CC)	> 200F	> 93C
pH As Is (approx.)		2.2	
Evaporation Rate (Ether=1)		< 1.00	

NA = not applicable ND = not determined

10 STABILITY & REACTIVITY

STABILITY:

Stable under normal storage conditions.

HAZARDOUS POLYMERIZATION:

Will not occur.

INCOMPATIBILITIES:

May react with strong oxidizers.

DECOMPOSITION PRODUCTS:

Thermal decomposition (destructive fires) yields elemental oxides.

INTERNAL PUMPOUT/CLEANOUT CATEGORIES:

"B"

11 TOXICOLOGICAL INFORMATION

Oral LD50 RAT:	>2,000 mg/kg
NOTE - Estimated value	
Dermal LD50 RABBIT:	>2,000 mg/kg
NOTE - Estimated value	

12 ECOLOGICAL INFORMATION

AQUATIC TOXICOLOGY

Daphnia magna 48 Hour Acute Toxicity (Estimated)

LC50= 1180; No Effect Level= 750 mg/L

Fathead Minnow 96 Hour Acute Toxicity (Estimated)

LC50= 1790; No Effect Level= 310 mg/L

BIODEGRADATION

BOD-28 (mg/g): 31

BOD-5 (mg/g): 9

COD (mg/g): 416

TOC (mg/g): 152

13 DISPOSAL CONSIDERATIONS

If this undiluted product is discarded as a waste, the US RCRA hazardous waste identification number is :
Not applicable.

Please be advised; however, that state and local requirements for waste disposal may be more restrictive or otherwise different from federal regulations. Consult state and local regulations regarding the proper disposal of this material.

14 TRANSPORT INFORMATION

DOT HAZARD: Not Applicable
 UN / NA NUMBER: Not applicable
 DOT EMERGENCY RESPONSE GUIDE #: Not applicable

15 REGULATORY INFORMATION

TSCA:
 All components of this product are listed in the TSCA inventory.

CERCLA AND/OR SARA REPORTABLE QUANTITY (RQ):
 No regulated constituent present at OSHA thresholds

USDA FEDERALLY INSPECTED MEAT AND POULTRY PLANTS:
 This product contains ingredients that have been determined as safe for use in systems for cooking or cooling containers of meat and/or poultry and in systems with no food contact. (G5, G7)

SARA SECTION 312 HAZARD CLASS:
 Immediate(acute)

SARA SECTION 302 CHEMICALS:
 No regulated constituent present at OSHA thresholds

SARA SECTION 313 CHEMICALS:
 No regulated constituent present at OSHA thresholds

CALIFORNIA REGULATORY INFORMATION

CALIFORNIA SAFE DRINKING WATER AND TOXIC ENFORCEMENT ACT (PROPOSITION 65) CHEMICALS PRESENT:

No regulated constituent present at OSHA thresholds

MICHIGAN REGULATORY INFORMATION

No regulated constituent present at OSHA thresholds

16 OTHER INFORMATION

NFPA/HMIS		CODE TRANSLATION
Health	1	Slight Hazard
Fire	1	Slight Hazard
Reactivity	0	Minimal Hazard
Special	NONE	No special Hazard
(1) Protective Equipment	B	Goggles, Gloves

(1) refer to section 8 of MSDS for additional protective equipment recommendations.

CHANGE LOG

	EFFECTIVE DATE	REVISIONS TO SECTION:	SUPERCEDES
	-----	-----	-----
MSDS status:	03-SEP-1997		** NEW **
	16-JAN-2001	15	03-SEP-1997
	03-JAN-2002	3,4	16-JAN-2001


GE Betz

Fact Sheet

FloGard™ MS6206 Corrosion Inhibitor

- Mild steel corrosion inhibitor
- Excellent blended phosphate source for treatment programs

DESCRIPTION AND USE

FloGard™ MS6206 is a liquid, phosphate-containing product designed to enhance corrosion protection in mill supply water systems, once through cooling systems and open recirculating systems. This product contains a blend of phosphate to develop the optimal combination of inhibitor. This product can be fed at a variety of feed rates depending on the application and the water chemistry. The phosphate film formed in these programs provides excellent protection for mild steel.

TREATMENT AND FEEDING REQUIREMENTS

The optimal dosage of FloGard MS6206 is a function of the corrosivity of the water to be treated, application conditions and the specific application. For best performance, this product should be fed continuously. This product is to be used in accordance with control procedures that GE Betz establishes for a specific application. This product is also extensively used as a phosphate source for programs like Dianodic III and Continuum AEC technologies.

FloGard MS6206 may be fed directly from the shipping container.

A photometric procedure can be used to monitor the orthophosphate concentration in the treated water.

GENERAL PROPERTIES

Physical properties of FloGard MS6206 are shown on the Material Safety Data Sheet, a copy of which is available upon request.

PACKAGING INFORMATION

FloGard MS6206 is a liquid blend, supplied in 55-gallon (208-liter), bung-type, nonreturnable steel drums. In addition, it is also available under the GE Betz Semi-Bulk Control™ and Point of Feed™ Delivery Programs for contracted quantities in certain geographic areas.

STORAGE

Protect from freezing. If this product is frozen during shipment or storage, slight mixing may be required to ensure homogeneity.

SAFETY PRECAUTIONS

A Material Safety Data Sheet containing detailed information about this product is available upon request.

Copyright

Gl: Betz, Inc.
4636 Somerton Road
Trevose, PA 19053
Business telephone: (215) 255-3300

Material Safety Data Sheet

Issue Date: 10-JUL-2002

EMERGENCY TELEPHONE (Health/Accident): (800) 877-1940

1. PRODUCT IDENTIFICATION

PRODUCT NAME:

FLOGARD MS6206

PRODUCT APPLICATION AREA:

WATER-BASED CORROSION INHIBITOR.

2. COMPOSITION / INFORMATION ON INGREDIENTS

Information for specific product ingredients as required by the U.S. OSHA HAZARD COMMUNICATION STANDARD is listed. Refer to additional sections of this MSDS for our assessment of the potential hazards of this formulation.

HAZARDOUS INGREDIENTS:

This product is not hazardous as defined by OSHA regulations.

No component is considered to be a carcinogen by the National Toxicology Program, the International Agency for Research on Cancer, or the Occupational Safety and Health Administration at OSHA thresholds for carcinogens.

This product contains 5-10% tetrapotassium pyrophosphate (TPP; CAS# 7320-34-5). TPP is listed by NIOSH as a hazardous ingredient. TPP is corrosive to aluminum.

3. HAZARDS IDENTIFICATION

***** EMERGENCY OVERVIEW

CAUTION

May cause slight irritation to the skin. May cause moderate irritation to the eyes. Dusts may cause irritation to the upper respiratory tract.

DOT hazard is not applicable
Emergency Response Guide is not applicable
Odor: None; Appearance: Colorless, Liquid

Fire fighters should wear positive pressure self-contained breathing apparatus (full face-piece type). Proper fire-extinguishing media: dry chemical, carbon dioxide, foam or water

POTENTIAL HEALTH EFFECTS

ACUTE SKIN EFFECTS:

Primary route of exposure; May cause slight irritation to the skin.

ACUTE EYE EFFECTS:

May cause moderate irritation to the eyes.

ACUTE RESPIRATORY EFFECTS:

Dusts may cause irritation to the upper respiratory tract.

INGESTION EFFECTS:

May cause slight gastrointestinal irritation.

TARGET ORGANS:

No evidence of potential chronic effects.

MEDICAL CONDITIONS AGGRAVATED:

Not known.

SYMPTOMS OF EXPOSURE:

Inhalation of dust and/or vapors may cause eye, nose, throat and respiratory tract irritation.

4 FIRST AID MEASURES

SKIN CONTACT:

Wash thoroughly with soap and water. Remove contaminated clothing. Get medical attention if irritation develops or persists.

EYE CONTACT:

Remove contact lenses. Hold eyelids apart. Immediately flush eyes with plenty of low-pressure water for at least 15 minutes. Get immediate medical attention.

INHALATION:

If nasal, throat or lung irritation develops - remove to fresh air and get medical attention.

INGESTION:

Do not feed anything by mouth to an unconscious or convulsive victim. Do not induce vomiting. Immediately contact physician. Dilute contents of stomach using 3-4 glasses milk or water.

NOTES TO PHYSICIANS:

No special instructions

5 FIRE FIGHTING MEASURES

FIRE FIGHTING INSTRUCTIONS:

Fire fighters should wear positive pressure self-contained breathing apparatus (full face-piece type).

EXTINGUISHING MEDIA:

dry chemical, carbon dioxide, foam or water

HAZARDOUS DECOMPOSITION PRODUCTS:

Thermal decomposition (destructive fires) yields elemental oxides.

FLASH POINT:

> 200F > 93C P-M(CC)

6 ACCIDENTAL RELEASE MEASURES**PROTECTION AND SPILL CONTAINMENT:**

Ventilate area. Use specified protective equipment. Contain and absorb on absorbent material. Place in waste disposal container. Flush area with water. Wet area may be slippery. Spread sand/grit.

DISPOSAL INSTRUCTIONS:

Water contaminated with this product may be sent to a sanitary sewer treatment facility, in accordance with any local agreement, a permitted waste treatment facility or discharged under a permit. Product as is - Incinerate or land dispose in an approved landfill.

7 HANDLING & STORAGE**HANDLING:**

Normal chemical handling.

STORAGE:

Keep containers closed when not in use. Reasonable and safe chemical storage.

8 EXPOSURE CONTROLS / PERSONAL PROTECTION**EXPOSURE LIMITS**

This product is not hazardous as defined by OSHA regulations.

ENGINEERING CONTROLS:

adequate ventilation

PERSONAL PROTECTIVE EQUIPMENT:

Use protective equipment in accordance with 29CFR 1910 Subpart I

RESPIRATORY PROTECTION:

A RESPIRATORY PROTECTION PROGRAM THAT MEETS OSHA'S 29 CFR 1910.134 AND ANSI Z88.2 REQUIREMENTS MUST BE FOLLOWED WHENEVER WORKPLACE CONDITIONS WARRANT A RESPIRATOR'S USE. USE AIR PURIFYING RESPIRATORS WITHIN USE LIMITATIONS ASSOCIATED WITH THE EQUIPMENT OR ELSE USE SUPPLIED AIR-RESPIRATORS. If air-purifying respirator use is appropriate, use a respirator with dust/mist filters.

SKIN PROTECTION:

neoprene gloves-- Wash off after each use. Replace as necessary.

EYE PROTECTION:

splash proof chemical goggles

9 PHYSICAL & CHEMICAL PROPERTIES

Specific Grav. (70F, 21C)	1.528	Vapor Pressure (mmHG)	- 18.0
Freeze Point (F)	< < 0	Vapor Density (air=1)	< 1.00
Freeze Point (C)	< -18		

Viscosity (cps 70F, 21C)	30	% Solubility (water)	100.0
Odor	None		
Appearance	Colorless		
Physical State	Liquid		
Flash Point	P-M(CC)	> 200F	> 93C
pH As Is (approx.)	8.8		
Evaporation Rate (Ether=1)	< 1.00		

NA = not applicable ND = not determined

10 STABILITY & REACTIVITY

STABILITY:

Stable under normal storage conditions.

HAZARDOUS POLYMERIZATION:

Will not occur.

INCOMPATIBILITIES:

May react with strong oxides.

DECOMPOSITION PRODUCTS:

Thermal decomposition (destructive fires) yields elemental oxides.

INTERNAL PUMPOUT/CLEANOUT CATEGORIES:

"A"

11 TOXICOLOGICAL INFORMATION

Oral LD50 RAT:	>2,000 mg/kg
NOTE - Estimated value	
Dermal LD50 RABBIT:	>2,000 mg/kg
NOTE - Estimated value	

12 ECOLOGICAL INFORMATION

AQUATIC TOXICOLOGY

Daphnia magna 48 Hour Static Renewal Bioassay
 LC50= 1275; No Effect Level= 500 mg/L
 Fathead Minnow 96 Hour Static Renewal Bioassay
 LC50= 1740; No Effect Level= 1000 mg/L
 Mysid Shrimp 48 Hour Static Renewal Bioassay
 LC50= 724; No Effect Level= 155 mg/L
 Rainbow Trout 96 Hour Acute Toxicity (Estimated)
 LC50 Greater Than= 1000 mg/L

BIODEGRADATION

Product contains only inorganics that are not subject to typical biological degradation. Assimilation by microbes may occur in waste treatment or the environment.

13 DISPOSAL CONSIDERATIONS

If this undiluted product is discarded as a waste, the US RCRA hazardous waste identification number is :
 Not applicable.

Please be advised; however, that state and local requirements for waste disposal may be more restrictive or otherwise different from federal regulations. Consult state and local regulations regarding the proper disposal of this material.

14 TRANSPORT INFORMATION

DOT HAZARD: Not Applicable
UN / NA NUMBER: Not applicable
DOT EMERGENCY RESPONSE GUIDE #: Not applicable

15 REGULATORY INFORMATION

TSCA: All components of this product are listed in the TSCA inventory.

CERCLA AND/OR SARA REPORTABLE QUANTITY (RQ):

No regulated constituent present at OSHA thresholds

FOOD AND DRUG ADMINISTRATION:

21 CFR 176.170 (components of paper and paperboard in contact with aqueous and fatty foods)

SARA SECTION 312 HAZARD CLASS:

Product is non-hazardous under Section 311/312

SARA SECTION 302 CHEMICALS:

No regulated constituent present at OSHA thresholds

SARA SECTION 313 CHEMICALS:

No regulated constituent present at OSHA thresholds

CALIFORNIA REGULATORY INFORMATION

CALIFORNIA SAFE DRINKING WATER AND TOXIC

ENFORCEMENT ACT (PROPOSITION 65) CHEMICALS PRESENT:

No regulated constituent present at OSHA thresholds

MICHIGAN REGULATORY INFORMATION

No regulated constituent present at OSHA thresholds

16 OTHER INFORMATION

NFPA/HMIS		CODE TRANSLATION
Health	1	Slight Hazard
Fire	0	Minimal Hazard
Reactivity	0	Minimal Hazard
Special	NONE	No special Hazard
(1) Protective Equipment	B	Goggles, Gloves

(1) refer to section 8 of MSDS for additional protective equipment recommendations.

CHANGE LOG

EFFECTIVE DATE	REVISIONS TO SECTION:	SUPERCEDES
MSDS status: 29-JAN-1997		** NEW **

Material Safety Data Sheet - FLOGARD MS6206

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05-NOV-1997
10-DEC-1997
02-MAR-1998
21-NOV-2001
04-JAN-2002
13-JUN-2002

DATA REQUEST

223. Please provide the frequency of delivery of the chemicals listed on page 8.12-6 (Table 8.12-1) of the July 2003 Amendment. This frequency should be for deliveries above and beyond that proposed for the other operations of the power plant already addressed in the AFC.

RESPONSE

In general, chemicals would be delivered every 2 to 4 weeks. The frequency of chemical deliveries would vary depending on the size of the onsite storage tanks, the distance from supplier, the cost of delivery, the cost of the chemical, the shelf life of the chemical, the onsite usage of the chemical, owner/supplier purchasing plans, the resources of the chemical supplier, and the operating schedule of the power plant. During the detailed design phase of the project, these factors will be evaluated to develop the actual delivery schedule.

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BACKGROUND [224]

The applicant proposes to use treated wastewater as one option for cooling at the proposed facility. Staff is concerned about the reliability of the procedure to ensure that the quality of the utilized water is maintained within the standards required under Title 22, Section 60301 of the California Code of Regulations for disinfected tertiary recycled water.

DATA REQUEST

224. Please provide a water quality monitoring plan that describes how sampling and analysis would be accomplished under the requirements of Title 22, Section 60321 of the California Code of Regulations to ensure the tertiary water quality standards specified.

RESPONSE

Prior to implementation of recycled water projects, the California Department of Health Services requires submission of an "Engineering Report" that, among other things, must include a monitoring and reporting plan. A specific monitoring and reporting plan has not been developed for the Potrero Power Plant facility. As stated in guidelines published by the CDHS, "The report should describe the planned monitoring and reporting program, including all monitoring required by the Water Recycling Criteria, and include the frequency and location of sampling. Where continuous analysis and recording equipment is used, the method and frequency of calibration should be stated. All analyses shall be performed by a laboratory approved by the State Department of Health Services." (A copy of the CDHS guidelines is provided as Attachment 224-1.) It is expected that the monitoring and reporting plan will be similar to the plan used by South Bay Water Recycling (SBWR) in San Jose, CA. The SBWR facility provides recycled water to customers in the San Jose area and is scheduled to deliver recycled water to a new 600 MW power plant when construction is completed. (A copy of a recent water quality monitoring report issued by SBWR is provided as Attachment 224-2.) Specific requirements for types and frequency of analysis are contained in the NPDES permit for the SBWR facility.

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STATE OF CALIFORNIA-HEALTH AND HUMAN SERVICES AGENCY
DEPARTMENT OF HEALTH SERVICES
DIVISION OF DRINKING WATER AND ENVIRONMENTAL MANAGEMENT
DRINKING WATER PROGRAM
RECYCLED WATER UNIT

GRAY DAVIS, GOVERNOR



**GUIDELINES FOR THE
PREPARATION OF AN ENGINEERING REPORT
FOR THE PRODUCTION, DISTRIBUTION AND USE OF RECYCLED WATER**

March 2001

(Replaces September 1997 Version)

1.0 INTRODUCTION

The current State of California Water Recycling Criteria (adopted in December 2000) require the submission of an engineering report to the California Regional Water Quality Control Board (RWQCB) and the Department of Health Services (DHS) before recycled water projects are implemented. These reports must also be amended prior to any modification to existing projects. The purpose of an engineering report is to describe the manner by which a project will comply with the Water Recycling Criteria. The Water Recycling Criteria are contained in Sections 60301 through 60355, inclusive, of the California Code of Regulations, Title 22. The Criteria prescribe:

- * Recycled water quality and wastewater treatment requirements for the various types of allowed uses,
- * Use area requirements pertaining to the actual location of use of the recycled water (including dual plumbed facilities), and
- * Reliability features required in the treatment facilities to ensure safe performance.

Section 60323 of the Water Recycling Criteria specifies that the engineering report be prepared by a properly qualified engineer, registered in California and experienced in the field of wastewater treatment.

Recycled water projects vary in complexity. Therefore, reports will vary in content, and the detail presented will depend on the scope of the proposed project and the number and nature of the agencies involved in the production, distribution, and use of the recycled water. The report should contain sufficient information

to assure the regulatory agencies that the degree and reliability of treatment is commensurate with the requirements for the proposed use, and that the distribution and use of the recycled water will not create a health hazard or nuisance.

The intent of these guidelines is to provide a framework to assist in developing a comprehensive report which addresses all necessary elements of a proposed or modified project. Such a report is necessary to allow for the required regulatory review and approval of a recycled water project.

References which may assist in addressing various project elements include:

- ☐ State of California Water Recycling Criteria (December 2000)
- ☐ State of California Regulations Relating to Cross-Connections
- ☐ California Waterworks Standards
- ☐ California Water Code
- ☐ Guidelines for the Distribution of Non-potable Water, (California-Nevada Section-AWWA, 1992)
- ☐ Guidelines For The On-Site Retrofit of Facilities Using Disinfected Tertiary Recycled Water (California-Nevada Section-AWWA, 1997)
- ☐ Manual of Cross-Connection Control/Procedures and Practices (DOHS)
- ☐ Ultraviolet Disinfection - Guidelines for Drinking Water and Water Reuse (NWRI/AWWARF, December 2000)

2.0 RECYCLED WATER PROJECT

The following sections discuss the type of information that should be presented and described in the engineering report. Some sections may be applicable only to certain types of uses.

2.1 General

The report shall identify all agencies or entities that will be involved in the design, treatment, distribution, construction, operation and maintenance of the recycled facilities, including a description of any legal arrangements outlining authorities and responsibilities between the

agencies with respect to treatment, distribution and use of recycled water. In areas where more than one agency/entity is involved in the reuse project, a description of arrangements for coordinating all reuse-related activities (e.g. line construction/repairs) shall be provided. An organizational chart may be useful.

2.2 Rules and Regulations

The procedures, restrictions, and other requirements that will be imposed by the distributor and/or user should be described. In multiple projects covered under a Master Permit issued by the Regional Boards where the reuse oversight responsibility is delegated to the distributor and/or user, the requirements and restrictions should be codified into a set of enforceable rules and regulations. The rules and regulations should include a compliance program to be used to protect the public health and prevent cross connections. Describe in the report the adoption of enforceable rules and regulations that cover all of the design and construction, operation and maintenance of the distribution systems and use areas, as well as use area control measures. Provide a description of the organization of the agency or agencies who has the authority to implement and enforce the rules and regulations, and the responsibilities of pertinent personnel involved in the reuse program. Reference to any ordinances, rules of service, contractual arrangements, etc. should be provided.

2.3 Producer - Distributor - User

The producer is the public or private entity that will treat and/or distribute the recycled water used in the project. Where more than one entity is involved in the treatment or distribution of the recycled water, the roles and responsibilities of each entity (i.e. producer, distributor, user) should be described.

2.4 Raw Wastewater

Describe the chemical quality, including ranges with median and 95th percentile values;

Describe the source of the wastewater to be used and the proportion and types of industrial waste, and

Describe all source control programs.

2.5 Treatment Processes

Provide a schematic of the treatment train;

Describe the treatment processes including loading rates and contact times;

All filtration design criteria should be provided (filtration and backwash rates, filter depth and media specifications, etc.). The expected turbidities of the filter influent (prior to the addition of chemicals) and the filter effluent should be stated;

State the chemicals that will be used, the method of mixing, the degree of mixing, the point of application, and the dosages. Also describe the chemical storage and handling facilities, and

Describe the operation and maintenance manuals available.

2.6 Plant Reliability Features

The plant reliability features proposed to comply with Sections 60333 - 60355 of the Water Recycling Criteria should be described in detail. The discussion of each reliability feature should state under what conditions it will be actuated. When alarms are used to indicate system failure, the report should state where the alarm will be received, how the location is staffed, and who will be notified. The report should also state the hours that the plant will be staffed.

2.7 Supplemental Water Supply

The report should describe all supplemental water supplies. The description should include:

- * Purpose
- * Source
- * Quality
- * Quantity available
- * Cross-connection control and backflow prevention measures

2.8 Monitoring and Reporting

The report should describe the planned monitoring and reporting program, including all monitoring required by the Water Recycling Criteria, and include the frequency and location of sampling. Where continuous analysis and recording equipment is used, the method and frequency of calibration

should be stated. All analyses shall be performed by a laboratory approved by the State Department of Health Services.

2.9 Contingency Plan

Section 60323 (c) of the Water Recycling Criteria requires that the engineering report contain a contingency plan designed to prevent inadequately treated wastewater from being delivered to the user. The contingency plan should include:

- * A list of conditions which would require an immediate diversion to take place;
- * A description of the diversion procedures;
- * A description of the diversion area including capacity, holding time and return capabilities;
- * A description of plans for activation of supplemental supplies (if applicable);
- * A plan for the disposal or treatment of any inadequately treated effluent;
- * A description of fail safe features in the event of a power failure, and

A plan (including methods) for notifying the recycled water user(s), the regional board, the state and local health departments, and other agencies as appropriate, of any treatment failures that could result in the delivery of inadequately treated recycled water to the use area.

3.0 TRANSMISSION AND DISTRIBUTION SYSTEMS

Maps and/or plans showing the location of the transmission facilities and the distribution system layout should be provided. The plans should include the ownership and location of all potable water lines, recycled water lines and sewer lines within the recycled water service area and use area(s).

4.0 USE AREAS

The description of each use area should include:

- * The type of land uses;
- * The specific type of reuse proposed;

- * The party(s) responsible for the distribution and use of the recycled water at the site;
- * Identification of other governmental entities which may have regulatory jurisdiction over the re-use site such as the US Department of Agriculture, State Department of Health Services, Food and Drug Branch, the State Department of Health Services, Licensing and Certification Section, etc. These agencies should also be provided with a copy of the Title 22 Engineering Report for review and comment.
- * Use area containment measures;
- * A map showing:
 - Specific areas of use
 - Areas of public access
 - Surrounding land uses
 - The location and construction details of wells in or within 1000 feet of the use area
 - Location and type of signage
- * The degree of potential access by employees or the public;
- * For use areas where both potable and recycled water lines exist, a description of the cross-connection control procedures which will be used.

In addition to the general information described above, the following should be provided for the following specific proposed uses:

4.1 Irrigation

- Detailed plans showing all piping networks within the use area including recycled, potable, sewage and others as applicable.
- Description of what will be irrigated (e.g. landscape, specific food crop, etc.);
- Method of irrigation (e.g. spray, flood, or drip);
- The location of domestic water supply facilities in or adjacent to the use area;

- Site containment measures;
- Measures to be taken to minimize ponding;
- The direction of drainage and a description of the area to which the drainage will flow;
- A map and/or description of how the setback distances of Section 60310 will be maintained;
- Protection measures of drinking water fountains and designated outdoor eating areas, if applicable;
- Location and wording of public warning signs,
- The proposed irrigation schedule (if public access is included), and
- Measures to be taken to exclude or minimize public contact.

4.2 Impoundments

- The type of use or activity to be allowed on the impoundment;
- Description of the degree of public access;
- The conditions under which the impoundment can be expected to overflow and the expected frequency, and
- The direction of drainage and a description of the area to which the drainage will flow.

4.3 Cooling

- Type of cooling system (e.g. cooling tower, spray, condenser, etc.);
- Type of biocide to be used, if applicable;
- Type of drift eliminator to be used, if applicable, and
- Potential for employee or public exposure, and mitigative measures to be employed.

4.4 Groundwater Recharge

An assessment of potential impacts the proposal will have on underlying groundwater aquifers. The appropriate information

shall be determined through consultation with the Department on a case by case basis.

4.5 Dual Plumbed Use Areas

In accordance with Sections 60313 through 60316 of the Water Recycling Criteria.

4.6 Other Industrial Uses

The appropriate information shall be determined on a case by case basis.

4.7 Use Area Design

The report should discuss how domestic water distribution system shall be protected from the recycled water in accordance with the Regulations Relating to Cross-Connections and the California Waterworks Standards, and how the facilities will be designed to minimize the chance of recycled water leaving the designated use area. Any proposed deviation from the Water Recycling Criteria and necessity therefore, should be discussed in the report.

4.8 Use Area Inspections and Monitoring

The report should describe the use area inspection program. It should identify the locations at the use area where problems are most likely to occur (e.g. ponding, runoff, overspray, cross-connections, etc.) and the personnel in charge of the monitoring and reporting of use area problems.

4.9 Employee Training

The report should describe the training which use area employees will receive to ensure compliance with the Recycled Water Criteria, and identify the entity that will provide the training and its' frequency. The report should also identify any written manuals of practice to be made available to employees.

Rwdisk2/RGUIDE2001.DOC

Recycled Water Quality Information for the San Jose/Santa Clara Water Pollution Control Plant

2003

Water Quality Parameter	Yearly Average	Standard Deviation	Minimum Level	Maximum Level	Jan - Feb Average	Mar - Apr Average	May - Jun Average	Jul - Aug Average	Sep - Oct Average	Nov - Dec Average	Sample Frequency
General Parameters											
Alkalinity (Total as CaCO ₃), mg/L	194	6	170	212	195	188	199				Weekly
Ammonia (as Nitrogen), mg/L	<0.3	0.1	<0.1	0.8	0.3	<0.4	<0.2				Daily
Bicarbonate (HCO ₃), mg/L	194	6	170	212	195	188	199				Weekly
Biological Oxygen Demand, mg/L	3.1	0.5	2.0	6.0	3.0	3.6	2.7				Weekly
Conductivity, μ mhos/cm	1195	12	1106	1282	1185	1191	1208				Weekly
Hardness (as CaCO ₃), mg/L	245	5	229	261	248	239	248				Weekly
Nitrate (as Nitrogen), mg/L	8.7	0.3	7.0	10.0	8.6	9.1	8.5				Monthly
Nitrite (as Nitrogen), mg/L	<0.06	0.01	<0.05	0.1	<0.06	<0.07	<0.07				Weekly
Permeability SAR [calculated]	4.2	0.1	4.10	4.35	4.25	4.20	4.12				Monthly
pH (units)	7.0	0.1	6.7	7.2	7.0	6.9	7.0				Daily
Settleable Solids mg/L/hr	<0.1	***	<0.1	<0.1	<0.1	<0.1	<0.1				Daily
Temperature, degrees Fahrenheit	68.4	3.0	59.5	77.5	66.4	66.9	71.8				Daily
Total Coliform Count, CFU/100 ml	<1	***	<1	5.0	<1	<1	<1				Daily
Total Dissolved Solids, mg/L	706	8	660	742	708	698	713				Weekly
Total Fats, Oils & Grease, mg/L	<5	***	<5	<5	<5	<5	N/A				Quarterly
Total Suspended Solids, mg/L	2.0	0.2	1.1	3.6	1.8	2.1	2.0				3/Week
Turbidity, NTU	1.0	0.1	0.6	1.7	0.9	1.0	1.0				Daily
Chemical Parameters											
Arsenic (As), μ g/L	1.1	0.1	0.8	1.4	1.1	1.2	1.0				Monthly
Boron (B), μ g/L	624	7	580	651	616	625	630				Monthly
Cadmium (Cd), μ g/L	<0.5	0	<0.5	<0.5	<0.5	<0.5	<0.5				Monthly
Calcium (Ca), μ g/L	54,700	1,000	52,200	58,700	55,500	53,600	55,000				Monthly
Chloride (Cl), μ g/L	182,000	7,000	174,000	193,000	189,500	176,000	182,000				Monthly
Total Chromium (Cr), μ g/L	0.8	0.2	0.60	1.0	0.8	0.9	0.6				Monthly
Copper (Cu), μ g/L	2.6	0.3	1.6	3.9	2.7	2.8	2.3				Weekly
Lead (Pb), μ g/L	<1.0	0	<1.0	1.0	<1.0	<1.0	<1.0				Monthly
Magnesium (Mg), μ g/L	32,900	1,700	31,100	36,100	34,800	31,500	32,300				Monthly
Mercury (Hg), μ g/L	<0.0020	0	<0.002	0.002	<0.0020	<0.0020	<0.0020				Monthly
Nickel (Ni), μ g/L	5.9	0.3	5.0	8.0	5.9	5.6	6.1				Weekly
Phosphate (PO ₄), μ g/L	3,330	800	1,000	5,500	4,250	2,800	2,950				Monthly
Potassium (K), μ g/L	16,000	700	15,100	18,200	16,800	15,500	15,700				Monthly
Silicon (Si), μ g/L	12,800	100	12,100	13,600	12,800	12,900	12,700				Monthly
Silver (Ag), μ g/L	<0.2	0	<0.2	0.2	<0.2	<0.2	<0.2				Monthly
Sodium (Na), μ g/L	159,000	4,000	154,000	172,000	164,000	157,000	156,000				Monthly
Sulfate (SO ₄), μ g/L	107,000	2,600	104,000	111,000	109,000	104,000	108,000				Monthly
Zinc (Zn), μ g/L	54	1	44	64	53	54	55				Weekly
Other											
Dissolved Oxygen, mg/L	7.2	0.4	5.9	8.3	7.5	7.4	6.8				Daily
Ortho Phosphate, mg/L	<1.9	0.6	<1.0	3.4	2.6	<1.3	<1.8				Monthly

N/A = Not Available

MPN = Most Probable Number

SAR = $[Na^+]/\sqrt{((Ca^{++})+[Mg^{++}])/2}$

NTU = Nephelometric Turbidity Units (measure of the suspended material in water)

mg/L = Milligrams per Liter (parts per million)

 μ g/L = Micrograms per Liter (parts per billion)

BACKGROUND [225]

The once-through cooling system that was first proposed in the AFC would have its water supplied by the San Francisco Bay, which is a source of basically constant temperature and unlimited quantity. The varying weather conditions of the site may affect the reliability of the upland cooling tower system (wet/dry plume-abated cooling tower) with respect to the total load output.

DATA REQUEST

225. Please discuss the effects of the upland cooling tower system (wet/dry plume-abated cooling tower) on the reliability of the total power output. Include a comparison between the once-through cooling system and the upland cooling tower system.

RESPONSE

The wet/dry tower is expected to have a slightly higher MW-hr loss due to the additional components required. As discussed in the response to CEC Data Request 221, the overall efficiency of the plant would decrease with a wet/dry cooling tower system. This efficiency decrease is directly related to a decrease in plant power output. The table below shows the percentage decrease in plant output relative to the once-through case.

Plant Output Comparison Table at Full Load Operation

Condition	Decrease in Output Relative to Once- Through System
Summer (80°F ambient air, 40% relative humidity, 59.1°F Bay Water)	1.1%
ISO (59°F, 60% relative humidity, 59.1°F Bay Water)	0.6%
Winter (35°F, 50% relative humidity, 44.1°F Bay Water)	0.3%

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BACKGROUND [226]

The equipment differences between once-through cooling and the wet/dry cooling tower systems are stated in the Potrero Amendment Section 2.1.1.

DATA REQUEST

226. Please compare the expected reliability of the once-through cooling system with the upland cooling tower system.

RESPONSE

The historical reliability of once-through cooling systems and cooling tower systems was reviewed for units that have been operating for 30 years or less and whose size is comparable to that of Potrero Unit 7. Once-through cooling systems were found to have an equivalent availability factor (EAF) of 0.11 percent, as compared to an EAF of 0.25 percent for cooling tower systems. Therefore, once-through cooling systems are more than twice as reliable as cooling tower systems. The reliability is even higher for the once-through system when the tertiary treatment system (required for treating the makeup gray water) is considered in the comparison.

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BACKGROUND [227]

To determine the economic benefits of the proposed project amendment to the City and County of San Francisco, please provide the following.

DATA REQUEST

227. *Please provide the estimated cost of purchasing 4.7 million gallons per day of secondary treated wastewater and the associated waste discharge fees to the City of San Francisco.*

RESPONSE

Discussions with the City and County of San Francisco have not progressed to a stage that would allow the Applicant to form estimates of the identified costs.

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BACKGROUND [228 and 229]

The project proposes to obtain secondary treated effluent from the Southeast Water Pollution Control Plant (SEWPCP), and return the blowdown and tertiary treatment sludge back to the SEWPCP. However, no evidence of confirmation of this arrangement is provided.

DATA REQUEST

228. *Please provide a will-serve letter to receive effluent from the SEWPCP. If a will-serve letter cannot be provided, please describe alternative sources of recycled cooling water.*

RESPONSE

The Applicant does not have a "will serve letter" to receive effluent from the SEWPCP. The Applicant is not currently aware of any alternative sources of wastewater. Please see the Applicant's response to the August 8, 2003 Ruling and Order for further discussion of this issue.

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DATA REQUEST

229. *Please provide a letter that confirms that the SEWPCP would accept waste streams from the Unit 7 project.*

RESPONSE

The Applicant does not have a letter confirming that SEWPCP would accept waste streams from the Unit 7 Project, nor does it believe that such a letter would be necessary for construction and operation of Potrero Unit 7. As discussed elsewhere in these responses to data requests, the effluent would meet all applicable requirements for discharge to the SEWPCP.

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BACKGROUND [230 through 233]

The project proposes to discharge cooling tower blowdown and tertiary treatment sludge to the City of San Francisco sewer system to be routed to SEWPCP. Water quality information is provided for the blowdown stream, but is not provided for the sludge. It is likely that other waste streams would be generated on site as well, such as equipment wash water. Staff requires full characterization of waste discharge.

DATA REQUEST

230. *Please provide characterization of all waste streams that would be discharged to the sewer system for treatment at the SEWPCP. Please provide characterization of these streams individually and as a combined waste stream that will account for full operation of the project. If some liquid waste streams would be discharged by other means, please describe the methods to be used.*

RESPONSE

The wastewater streams from operation and maintenance of Unit 7 would include (1) equipment wash water, (2) drains, (3) sanitary waste, (4) stormwater, (5) cooling tower blowdown, and (6) tertiary treatment sludge (Table 230-1). Due to the potential for high concentrations of heavy metals, equipment wash water would be disposed of at an offsite facility. Both sanitary waste and drain streams would be discharged to the City sewer system. Stormwater would be discharged to both the existing outfall and sewer system.

Table 230-1
Wastewater Streams (gpd)

Source		Avg. Flow	Max. Flow	Disposal/Discharge
Equipment Washdown ¹	HRSG	0.0	0.0	Offsite Disposal
	CT Compressor Wash	0.12	81.0	
Drains	Turbine/CT Building	0.0	10.0	City of SF Sewer
Sanitary Waste	Personnel Facilities	1.04	20.0	City of SF Sewer
Storm Water ¹	Storm Water Runoff	3.74	500.0	Existing Potrero PP Outfall No. E003 and E005 and SF Sewer
Oil Water Separator	Floor Drains/Equipment Containment	0.21	270.0	City of SF Sewer
Tower Blowdown	Wet/Dry Cooling Tower	963,360	1,077,120	Line to SEWPCP
Tertiary Plant Sludge	Tertiary Water Treatment Plant	24,984	28,800	Line to SEWPCP
Notes:				
1. Periodic event as needed. Does not represent an incremental waste water stream since the site of Unit 7 was a preexisting part of the Potrero PP and included existing storm water flows.				

A supply of 4.7 million gallons per day (mgd) of secondary wastewater would be provided via an 18-inch pipeline from the SEWPCP to an onsite recycled water treatment plant. Treated secondary effluent from SEWPCP would be treated to CCR Title 22 “disinfected tertiary recycle water” standards. The tertiary water treatment plant would use membrane bioreactor technology to coagulate phosphorus, oxidize ammonia and BOD, and filter suspended solids. Processes would include aluminum sulfate (alum) injection to bind phosphorus, sodium

hydroxide addition to maintain pH, a UV light disinfection system, and sodium hypochlorite addition to chlorinate the treated water. These are standard processes, some of which are in use at the SEWPCP. The tertiary water would be pumped to onsite storage tanks for use as cooling tower makeup water.

Additives to the tertiary treated water would be used in the wet/dry cooling tower to control water quality. The additives and resulting concentrations in the wastewater stream would be as follows:

- Sulfuric acid would be added to control and maintain pH and alkalinity. The maximum alkalinity would be 200 mg/L, but it may be lower depending on the concentration of calcium in the water. The blowdown alkalinity would be less than 200 mg/L.
- An organic phosphonate would be added to inhibit calcium carbonate scale. Two compounds would be used: amino-methylene phosphonic acid or 1-hydroxyl-ethylidene-1,1-diphosphonic acid. The blowdown concentration would be 10 to 15 mg/L as phosphate.
- Sodium hypochlorite is the main anti-microbial agent that will be added to control biofouling. The concentration of sodium hypochlorite in blowdown would be less than 0.5 mg/L.
- A second anti-microbial agent, isothiazolone, would be used infrequently to control chlorine resistant microorganisms. The concentration of isothiazolone in blowdown would be less than 1.5 mg/L. Manufacturer's data indicate that isothiazolone has a half-life of 1.5 hours.
- A polysilicate would be used to protect metal from corrosion in doses from 8 to 20 mg/L. The typical concentration of polysilicate in blowdown would be 4 to 5 ppm. A synthetic polyacrylate would be used as a dispersant to control scale deposits at a dose of 4 to 5 mg/L. The typical concentration of polyacrylate in blowdown would be 2 to 5 ppm.

The above additives are short-lived and the concentrations in the blowdown stream would have a *de minimis* effect on the cooling water chemistry. None of these are hazardous waste and they do not require special handling.

The tertiary treatment would result in the water quality characteristics shown in the following table (Table 8.14-1 from the Amendment).

**Amendment Table 8.14-1
Cooling Tower Water Quality Concentrations**

Parameter	Unit	Tertiary Cooling Tower Makeup Water (Recycled)	Estimated Cooling Tower Water Blowdown (After 5 Concentration Cycles)
Calcium	mg/L	29	145
Magnesium	mg/L	42	210
Sodium	mg/L	361	1,805
Potassium	mg/L	23	115
Bicarbonate	mg/L	225	225
Carbonate	mg/L		
Hydroxide	mg/L		
Chloride	mg/L	581	2,905
Sulfate	mg/L	120	1,308
Nitrates	mg/L		
Silica	mg/L	12.7	65
Total Suspended Solids	mg/L	1	5-15
pH	pH units	7.5	8-8.5
Oil & Grease	mg/L	<1.0	5
Fluoride	mg/L	1.2	6
TDS	mg/L	1,390	7,000
Phosphorous	mg/L	1-3	15-20
Ammonia Nitrogen	mg/L	4-5	25
BOD	mg/L	5-15	50
Chromium ¹	µg/L	1.3	6.5
Copper ¹	µg/L	14.5	72.5
Mercury ¹	µg/L	0.0187	0.0935
Nickel ¹	µg/L	3.9	19.5
Lead ¹	µg/L	2.5	12.5
Selenium ¹	µg/L	0.5	2.5
Zinc ¹	µg/L	62.4	312
Note: ¹ Metal concentrations obtained from SEWPCP NPDES permitting information. Metals will not be added in the power plant cooling system. Evaporation of water in the cooling system will increase the concentration of metals.			

The tertiary water treatment plant would reduce the concentrations of five parameters in the secondary effluent from the SEWPCP as shown in the following table.

Parameter	Tertiary Treatment Plant Influent (mg/L)	Tertiary Treatment Plant Effluent (mg/L)
Total Suspended Solids	22.0	1.0
Phosphorus	18.2	2.0
Oil & Grease	5.0	1.0
Ammonia Nitrogen	25	5.0
BOD	14	10

Sludge from the tertiary treatment plant is returned directly to the SEWPCP. Because some of the total suspended solids, oil & grease and BOD are converted to biomass, a reaction model is need to predict the parameter concentrations in the tertiary sludge. The model indicates that for the predicted range of operational conditions, sludge flows would range from 10 to 20 gpm and the total solids would range from 2,500 mg/L to 5,500 mg/L.

The wet/dry cooling system would circulate cooling water through five concentration cycles as shown in Table 8.14-1 above. Makeup water would be added continually to the cooling water (design rate of 3,239 gpm) and blowdown would be continually removed (at a design rate of 669 gpm) to maintain water chemistry. The difference between these two rates is due to loss by evaporative cooling. As a consequence, the blowdown return flow would contain approximately 5 times the concentration of the constituents in the wastewater remaining after tertiary treatment. The blowdown wastewater characteristics are shown in the previous table. The constituents in the blowdown stream would be those in the secondary wastewater supplied by the SEWPCP plus the additives listed above. The blowdown discharge would return between 0.96 mgd and 1.47 mgd of the 4.7 mgd supplied for the project.

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DATA REQUEST

231. Please provide an analysis of the combined waste discharge in relation to relevant water quality standards determined by the City of San Francisco to enable a discharger to receive an Industrial Wastewater Discharge permit.

RESPONSE

The City and County of San Francisco Public Utilities Commission (SFPUC) sewer permit regulations apply to the Potrero PP project. The purpose of the ordinance is to protect human health and the environment by preventing discharge of pollutants into the sewerage system that could obstruct or damage the system, interfere with or inhibit or disrupt treatment facilities or processes, or pass through the system and contribute to violations of regulatory requirements imposed on the City.

The ordinance includes the following pollutant limitations:

pH	6.0 min; 9.5 max
Dissolved sulfides	0.5 mg/L
Temperature	125°F
Hydrocarbon oil and grease	100 mg/L

The current Industrial Wastewater Discharger (Class I) permit (99-0500) was issued by the SFPUC, Bureau of Environmental Regulation and Management pursuant to the provisions of Sections 120, 124, and 125 of Chapter X (Public Works Code) of Part II of the San Francisco Municipal Code, Article 4.1. It authorizes the Potrero PP to discharge wastewater into the City's sewer system through the side sewer(s) located on 23rd Street as long as the effluent meets the criteria listed in Table 231-1 (which include the above ordinance limitations):

Table 231-1
Criteria for Wastewater Discharges to the City's Sewer System

Pollutant Parameter	Limit	Note(s)
pH	6.0 – 9.5	1
Dissolved Sulfides	0.5 mg/L	1
Temperature	125°F (52°C)	1,2
Hydrocarbon Oil and Grease	100 mg/L	1
Total Recoverable Oil and Grease	300 mg/L	3
Arsenic	4.0 mg/L	4
Cadmium	0.5 mg/L	4
Chromium	5.0 mg/L	4
Copper	4.0 mg/L	4
Lead	1.5 mg/L	4
Mercury	0.05 mg/L	4
Nickel	2.0 mg/L	4
Silver	0.6 mg/L	4
Zinc	7.0 mg/L	4
Cyanide	1.0 mg/L	5
Phenols	23.0 mg/L	5
Notes: 1. Based on any grab sample 2. Except where higher temperature is required by law 3. Based on any composite sample representing discharge over a week 4. Based on 24-hour composite sampling 5. Based on grab sampling		

The permit also includes monitoring and reporting requirements. These include submission of flow diagrams, operation manual for any treatment system, checklist for a Spill Prevention Control and Countermeasures (SPCC) plan, a checklist for a Hazardous Waste Reduction

Assessment (HWRA) of the facility, and a checklist for a Stormwater Pollution Prevention Plan (SPPP) for the facility. Quarterly reports must be submitted that include average and maximum daily flow rates and analytical results.

The six wastewater streams that would result from the Unit 7 plant are listed in the response to CEC Data Request 230 along with the disposal/discharge locations. The small-volume, periodic drain, sanitary, and oil-water separator wastewater flows would be discharged to the City of San Francisco sewer system as described in the response to CEC Data Request 230.

The continuous larger-volume flows include the blowdown water from the wet/dry tower and sludge from the tertiary treatment plant. Blowdown water from the wet/dry tower would be returned to the SEWPCP in an 8-inch-diameter pipeline. The sludge from the tertiary treatment plant would be returned to the SEWPCP in a separate 4-inch-diameter pipeline. Both return pipelines would follow the alignment of the 18-inch-diameter pipeline supplying secondary treated water from the SEWPCP. The flows would be directed separately to the SEWPCP and not combined.

As described in the response to CEC Data Request 230, the tertiary plant reduces the concentrations of five parameters in the SEWPCP effluent. The tertiary treatment plant sludge contains the parameters shown in Table 8.14-1 plus phosphorus at concentrations as high as 3,066 mg/L. Only phosphorus accumulates in the sludge on a mass basis. The total suspended solids, oil & grease and BOD are converted to biomass. The total solids in the sludge would range from 2,500 mg/L to 5,500 mg/L.

Comparison of the cooling tower blowdown concentrations (from Table 8.14-1) and the Industrial Wastewater Standards are shown in Table 231-2 below. The blowdown meets the Industrial Wastewater Standards.

Table 231-2
Cooling Tower Water Quality Concentrations

Parameter	Unit	Tertiary Cooling Tower Makeup Water (Recycled)	Estimated Cooling Tower Water Blowdown (After 5 Concentration Cycles)	Industrial Wastewater Standard
Oil & Grease	mg/L	<1.0	5	300
Chromium ¹	µg/L	1.3	6.5	5,000
Copper ¹	µg/L	14.5	72.5	4,000
Mercury ¹	µg/L	0.0187	0.0935	50
Nickel ¹	µg/L	3.9	19.5	19,500
Lead ¹	µg/L	2.5	12.5	1,500
Zinc ¹	µg/L	62.4	312	7,000
Note: ¹ Metal concentrations were obtained from SEWPCP NPDES permitting information. Metals would not be added in the power plant cooling system. Evaporation of water in the cooling system would increase the concentration of metals.				

DATA REQUEST

232. Please provide details of the project's plan to assure compliance with City water quality standards, including any pre-treatment of waste streams that would be required. Please provide details of pre-treatment methods, as well as monitoring and recording efforts that would be required.

RESPONSE

Please see the responses to CEC Data Requests 224, 230, and 231. The wastewater streams that would be returned to the City would be supplied from City potable and the City SEWPCP source. The largest volume of wastewater would be the return of cooling tower blowdown water that is recycled water supplied from the SEWPCP. No pre-treatment of waste streams is anticipated. Plant personnel would continue the self-compliance monitoring program currently in place and submit quarterly reports to the City PUC.

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DATA REQUEST

233. If the analysis shows that any City of San Francisco water quality standards would be exceeded by the project's combined wastewater discharge, or that an Industrial Wastewater Discharge permit is unlikely to be granted to the project, please provide an analysis of the feasibility of implementing a zero liquid discharge system as an alternative to the sewer disposal scheme. The analysis should include the effects on water use and waste discharge, economic impacts (capital and operating costs), plant efficiency and output, solid waste disposal and environmental impacts.

RESPONSE

The project wastewater discharges are not anticipated to exceed City of San Francisco water quality standards.

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BACKGROUND [234 through 239]

The Potrero Power Plant Project Cooling Tower System Amendment (Amendment) states that Pier 96 (10 acres) or Pier 80 (7 acres) may be used for the laydown area (p. 2-4).

DATA REQUEST

234. Please describe the types of equipment, structural components, vehicles, and other construction materials that may be present at the Laydown area.

RESPONSE

Equipment and vehicles that may be present at the laydown area for unloading, loading, and hauling of construction-related materials would potentially include delivery trucks, haul trucks, pickup trucks, fuel trucks, fork lifts, and small mobile cranes.

The types of structural components and other construction materials at the laydown area would change daily, depending upon the construction schedule and activities taking place at the Potrero Power Plant. Examples of structural components and other construction materials would potentially include turbines, generators, transformers, concrete blocks, steel beams, piping, lumber, and cables. Unlike shipping containers, which can be stacked four or more high, the materials at the pier laydown site will be, for the most part, less than one story high.

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DATA REQUEST

235. Please describe the visibility of each potential laydown area, and the affected viewing population, particularly with respect to residential areas in Hunter's Point.

RESPONSE

The final location for the laydown area has not been determined. However, should Pier 96 be selected as the laydown area for the project, the nearest suitable marshalling area for construction materials and equipment is approximately one-half mile northeast of the residential areas of Hunters Point. Several commercial and industrial buildings, northeast of Evans Avenue, occur between Pier 96 and the residential areas of Hunters Point. These buildings serve to shield laydown area activities from residential views.

At Pier 80, the nearest suitable marshalling area for construction materials and equipment is approximately three-quarters of a mile northeast of the residential areas of Hunters Point. There are several commercial and industrial buildings along Islais Creek and Evans Avenue intervene between Pier 80 and the residential areas of Hunters Point. These buildings would help to shield laydown area activities.

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DATA REQUEST

236. Please describe the impacts that equipment, components, and materials will have on views from surrounding areas.

RESPONSE

Because a large percentage of the equipment, components, and materials that would be located at the laydown area would be low in profile, they would have a minimal impact on views from the surrounding areas. The activity at the site would be similar to what would be expected at a cargo-handling facility. Most materials would be at the laydown area for a short time before being relocated to the Potrero Power Plant site for final use.

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DATA REQUEST

237. Please describe any night lighting that would be required at the laydown area and the measures to control off-site visibility of the laydown area lights.

RESPONSE

The project does not include nighttime construction, so operational lighting would not be needed at the laydown area. Nighttime security lighting would be needed to ensure the safety of equipment and materials at the laydown area. The intensity of lighting is anticipated to be consistent with other land uses in the area. Glare screens would be installed on the temporary nighttime lighting as needed to avoid light intrusion on offsite areas. To the extent new lighting would be needed (beyond what is currently available), it would be temporary, and would be removed at the close of the laydown activity.

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DATA REQUEST

238. Please describe the existing night lighting conditions at the two candidate laydown areas.

RESPONSE

Both Pier 96 and Pier 80 are large, flat sections of land used for maritime activities, including handling and storing shipping containers from cargo vessels. Currently, nighttime lighting is located at both locations for safety reasons. The light patterns from the existing safety lighting is not considered to be intrusive upon the surrounding area. The light patterns emanating from existing safety lighting is consistent with the area's commercial/industrial uses. Additional temporary nighttime lighting at the laydown area would not result in noticeable additional intrusive lighting or glare due to the use of glare screens to reduce light intrusion on the surrounding area.

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DATA REQUEST

239. Please describe the visibility of any necessary night lighting at the two laydown area sites.

RESPONSE

Depending upon the viewing location, the additional nighttime safety lighting at either laydown area would be visible. Residents most likely to see the laydown area would be those living on the elevated areas to the south and west. However, the closest of these areas is one-half mile to the southwest. As with most light sources, the farther from the source, the less intrusive the light, in terms of intensity and proportion of the view. Also, installation of glare screens on the nighttime lighting would help reduce light spilling onto surrounding areas.

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BACKGROUND [240 and 241]

The Amendment identifies the need for a pump station at the SEWCP and a secondary effluent pump station near the Flynn Pump Station (p. 2-7).

DATA REQUEST

240. Please describe the aboveground components that will comprise each pump station and list the dimensions of the major pump station components.

RESPONSE

The Project's only off-site pump station is the secondary effluent pump station proposed to be located on Flynn Pump Station property fronting on Davidson Avenue. The other pump stations associated with the cooling tower system would be within the Potrero Power Plant site and would be integrated into the recycled water treatment facilities or the cooling tower structure. Based on the conceptual design of the recycled water delivery system, the Davidson Avenue pump station would occupy a pad approximately 10 by 24 feet. A single-story building would enclose the pumps. This structure is not yet designed, but would be compatible with the adjacent Flynn Pump Station.

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DATA REQUEST

241. Please describe views of the pump station sites and identify the affected viewers.

RESPONSE

The Davidson Avenue pump station would be located behind an existing iron fence in an asphalt paved lot. To the east is a car wrecking recycling yard, which is separated from the property by a solid fence. To the south is the paved area associated with the Flynn Pump Station; a high masonry wall screens the area from Evans Avenue. To the west is the two-story Flynn Pump Station. To the north is Davidson Avenue, across which is a one-story industrial

building. The pump station structure would be visible to employees and visitors at the surrounding industrial properties. There are no residents in the vicinity.

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BACKGROUND [242]

The Amendment states that two of the three existing fuel storage tanks on-site would be converted into recycled water storage tanks (p. 2-9).

DATA REQUEST

242. *Please clarify whether or not modification of the two tanks would change their outward appearance.*

RESPONSE

The outward structural appearance of the two tanks converted to recycled water storage would not change. The only modifications would be to add distribution piping between the recycled water treatment facility, the cooling tower, and the tanks.

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BACKGROUND [243 and 244]

The Amendment states that pipeline construction would require either jack and bore or microtunneling techniques utilizing a jacking pit and a receiving pit for the crossing of large existing facilities (p. 2-12).

DATA REQUEST

243. *Please describe the location(s) of any proposed jacking and receiving pits, their visual character, and the visibility of the pits from nearby roads, businesses, and residences.*

RESPONSE

Temporary pits would be needed on the north and south sides of Cesar Chavez Street at Indiana Street to accommodate a jack and bore or microtunneling operation. The pits would be open holes in the earth with retaining structure around the perimeter to prevent side failure. The jacking pit would be approximately 40 x 15 feet, sufficient to hold the needed construction equipment and supplies. The receiving pit would be smaller, approximately 15 x 15 feet. The pits would be visible from both Cesar Chavez and Indiana streets and from a new loft building at the northwestern corner of Cesar Chavez and Indiana streets. Other land uses in the immediate vicinity are single-story light industrial or warehouse facilities.

A casing may be installed in Third Street during the MUNI Light Rail construction to accommodate the pipeline. If this occurs, there would be no need for pits at Third and 23rd streets. If a jack and bore or microtunneling operation is needed under Third Street at 23rd

Street, the pits would be east and west of Third Street, along 23rd Street. The properties adjoining this intersection are truck parking lots.

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DATA REQUEST

244. Please identify the amount of time that each jack and bore/microtunneling site would be in use and visible.

RESPONSE

The jack and bore or microtunneling pits would be in use and visible for approximately 2 weeks, from initial excavation to closure.

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BACKGROUND [245]

The Amendment states that Warm Water Cove Park would potentially be affected by the wet/dry cooling tower (p. 8.11-3). Given the close proximity of the Park to the cooling tower and the tower's substantial size, it is important to accurately identify the potential visual impacts on visitors to the park.

DATA REQUEST

245. Please provide an 11" x 17" high-quality color photocopy of the existing view of the project site north from Warm Water Cove Park. Please also provide an 11" x 17" high-quality color photocopy of the proposed project with the wet/dry cooling tower from north from Warm Water Cove park. The images must be presented at life-size scale when held at a standard reading/viewing distance of 18 inches.

RESPONSE

Both the existing view and simulation of the wet/dry cooling tower from Warm Water Cove Park are presented at life-size scale when held at viewing distance of 18 inches in CEC Figures 245-1 and 245-2. The figures have been sized at 11 x 42 to capture the complete visual setting from this location.

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WARM WATER COVE PARK
SIMULATED SHIMMERS FINISHED INTERIOR COOLING TOWER
September 2020
Project Owner: URS
Project Manager: URS
Client: URS
URS PROJECT #12

BACKGROUND [246]

The existing view images and photosimulations presented in the Amendment for KOPs 1b, 2, and 3 are scaled 25 percent to 30 percent smaller than the life-size images presented in the Staff Assessment. It is important to present images of similar scale to facilitate the visual analysis of the wet/dry cooling option and its comparison to the proposed project.

DATA REQUEST

246. Please provide revised 11" x 17" versions of the images presented in Section 8.11 of the Amendment to achieve life-size scale when held at a standard reading/viewing distance of 18 inches. The images should appear in the same scale to those previously presented in the Staff Assessment.

RESPONSE

The images provided in the printed version of the Amendment meet the size specifications cited. The images provided for these KOPs are the same scale and in the same locations as in the Staff Assessment. Please note that the size of images printed from a CD version of the Amendment may vary, depending on the limitations of the printer and paper size used.

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BACKGROUND [247 and 248]

The Amendment does not identify any changes to the night lighting scheme for the proposed project site.

DATA REQUEST

247. Please identify any necessary night lighting for the wet/dry cooling system.

RESPONSE

Pending final design, lighting has not been specified for the wet/dry cooling tower. However, external lighting would be minimal, consistent with safety and security needs. The overall project site would be adequately lighted such that additional ground-level lighting would not be required for the cooling tower. During detailed design, safety lighting will be specified for the fan deck and access stairs. Lighting would be directed and shielded to avoid glare. Motion detectors would be used where applicable within safety requirements to reduce lighting needed for normal operations and maintenance. The lighting would be incandescent bulbs of a sufficient wattage to ensure safety. Floodlighting would not be used.

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DATA REQUEST

248. *If additional night lighting is necessary for the wet/dry cooling system, please describe the visibility of that lighting from KOPs 1b, 2, 3, and Warm Water Cove Park.*

RESPONSE

Most lighting would be at ground level. The only anticipated external lighting above ground level would be for catwalks and ladders on the fan deck. The external vertical surfaces of the cooling tower do not require lighting. Some of the cooling tower lighting is expected to be visible from KOPs #1B, 2, and 3 and Warm Water Cove Park. Because of the height of components of Unit 3 and Unit 7 relative to the cooling tower, lighting on the cooling tower is expected to be a subdominant element on the site. The anticipated visibility is as follows:

- KOP #1B: The orientation of the cooling tower would allow views of lighting on the west and south sides of the cooling tower fan deck and ground-level lighting on the south side. Some of the lighting associated with Unit 7 and with Unit 3 would be higher than the cooling tower. Lighting for portions of Unit 7 would be between the viewer and most of the cooling tower.
- KOP #2: The cooling tower is largely obscured by Unit 7. Depending on final placement of lighting, some fan deck lighting may be visible between Unit 7 structures.
- KOP #3: Only the tops of the exhaust fan structures are visible. Lighting from this view angle would be dominated by lighting on the taller Unit 3, behind the cooling tower.
- Warm Water Cove Park: Only a portion of the cooling tower is visible from the park, between existing warehouses on 23rd Street. Lighting at ground level and, perhaps, some rooftop lighting, would be visible. Given the seclusion of the park and the industrial nature of its surroundings, nighttime viewers from the park are expected to be few.

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BACKGROUND [249 AND 250]

In the Cooling Tower System Amendment the applicant has noted that they are going to use a plume abated cooling tower design; however, they have not provided sufficient technical specifications for the plume abated cooling tower, or a full description of the plume frequency modeling method they used to determine plume frequencies. Staff requires additional information regarding the plume abated cooling tower design and the Applicant's plume frequency modeling approach in order to confirm the Applicant's analysis.

DATA REQUEST

249. *Please provide a plume fogging frequency curve for the specified plume abated tower design.*

RESPONSE

The plume fogging frequency for the daylight hours with no rain and no fog for the five-year period of meteorological data is shown in CEC Figure 249-1.

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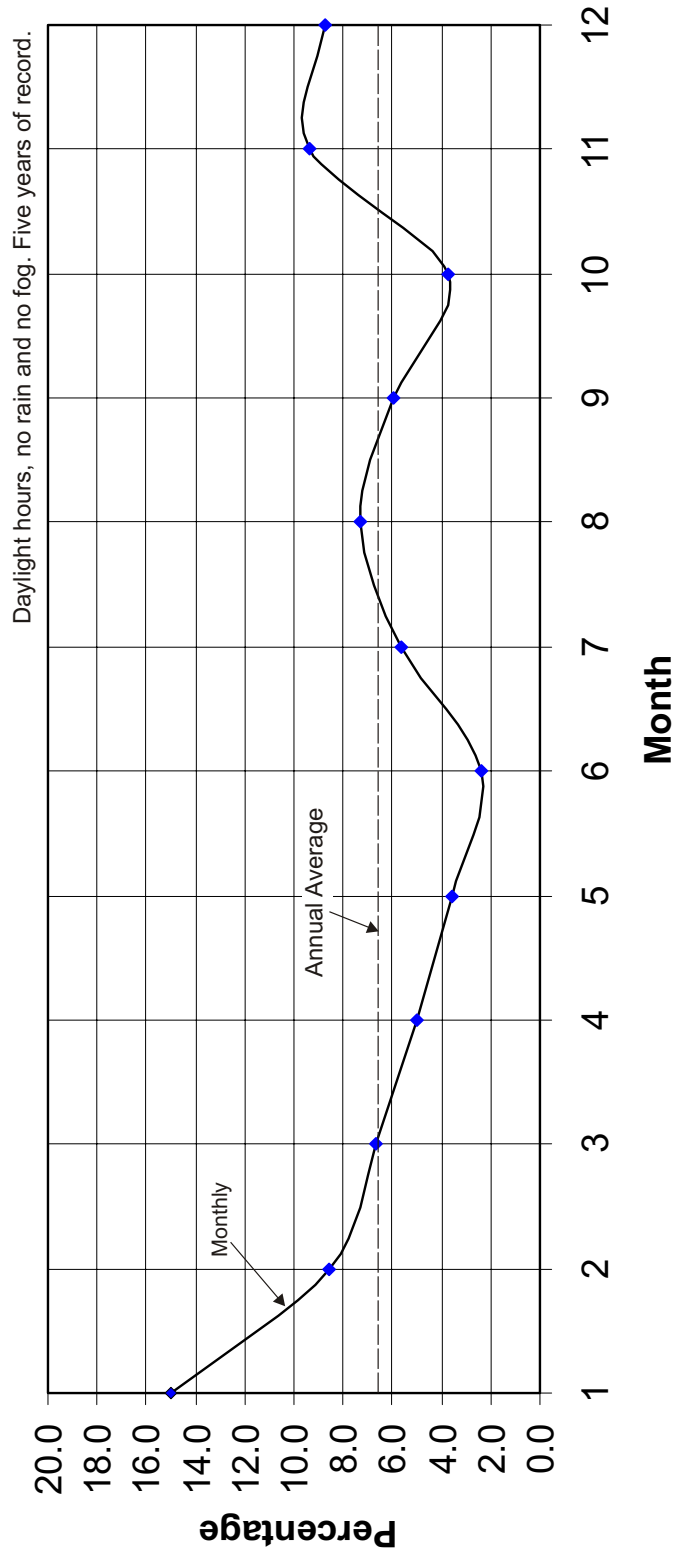
DATA REQUEST

250. *Please describe the methodology used to sort the meteorological data to determine which hours and total frequencies had the potential for a visible plume given in Table 8.11-1 of the Cooling Tower System Amendment.*

RESPONSE

The frequency of visible plumes from the cooling tower was based on meteorological data in TD-1440 format from the San Francisco International Airport (SFO) for the years 1995 – 1999. Based on the cooling tower design it was determined that the plume would be visible if the relative humidity was greater than 90%. The "anytime available hours" was determined by counting the number of hourly observations in the SFO dataset that included relative humidity. Likewise, the available hours for the other categories, day versus night, rain and/or fog were also determined by counting the number of hours in the data set that matched the criteria. To determine whether a plume would be visible for any given hour, the available hours for each category that had a relative humidity greater than 90% were counted.

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BACKGROUND [251 THROUGH 253]

Construction of the water treatment facility will necessitate additional excavation and the demolition of additional structures and associated hazardous and nonhazardous wastes. Excavated material could be classified as a hazardous waste requiring disposal at a landfill, depending on the concentrations of various constituents.

DATA REQUEST

251. Please provide an estimate of the additional amount of material that would need to be excavated for construction of the water treatment facility, cooling tower and the offsite pump station located adjacent to the SEWPCP.

Excavation for the cooling tower system (water treatment facility, cooling tower, pipelines, and offsite pump station) would generate approximately 19,050 cubic yards (32,500 tons) of soil and 2,300 cubic yards (4,100 tons) of rock. Excavation for the once-through cooling system (intake/discharge conduits and sidewalls, and intake structure) would generate approximately 22,400 cubic yards (38,500 tons) of material. Therefore, the cooling tower system would result in a reduction in the amount of excavated material.

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DATA REQUEST

252. Please provide estimates of the amounts of hazardous and nonhazardous wastes that would be generated from the demolition of the additional buildings identified in the cooling tower amendment.

RESPONSE

The estimated amounts of hazardous and nonhazardous wastes that would be generated from the demolition of the additional buildings identified in the Amendment are shown in CEC Table 252-1.

**CEC Table 252-1
Estimated Hazardous and Nonhazardous Wastes
Additional Building Demolition**

Building	Hazardous (cy)	Nonhazardous (cy)	
		Concrete	Wood
Welding/Electrical Shop	15	380	40
Abrasive Blast Building	no hazardous waste	180	0
Paint Shop	no hazardous waste	0	60
Sewer Lift Station	no hazardous waste	20	0
Total	15	580	100
cy = cubic yards Notes: 1. Asbestos containing ceiling tiles—10 cy; Buried transite conduits—5 cy. 2. No hazardous wastes are associated with the demolition. Equipment and contents to be relocated or sold. 3. All contents removed. Wood frame building. No concrete foundations. 4. Pumps and equipment will be salvaged.			

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DATA REQUEST

- 253. *Please estimate the amounts of hazardous and nonhazardous construction-related wastes that would be generated from building the water treatment facility and cooling tower.***

RESPONSE

The quantity of waste material potentially generated during construction of the cooling tower and the water treatment system facilities has not been estimated, but would be typical of industrial construction. It is anticipated that there will be no hazardous waste from construction. Other waste such as non-reusable forms, packaging, or spoiled construction materials would be disposed of at appropriate landfill or recycling facilities.

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**Responses to Southeast Alliance for Environmental Justice
and Our Children's Earth Data Requests 1-49 (Third Set)**

BACKGROUND [1 through 25]

Your amendment includes proposals to build a cooling tower with additional air pollution and odors as well as amendments governing the operations of the turbines and other air pollution sources for the project. The following questions under Air Quality seek further information regarding these pollutants and their potential public health impacts.

DATA REQUEST

- 1. Please update any information already provided regarding all proposed projects that are now under discussion by any governmental or private party, including their addresses or cross-street locations, within a six-mile radius of the proposed site, that will be a source of any of the pollutants proposed to be emitted from the cooling tower.***

RESPONSE

Please see the Applicant's Objection to Interveners SAEJ/OCE's Third Set of Data Requests filed on August 18, 2003.

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DATA REQUEST

- 2. Please update any information about BACT for your turbines, which are included in your amendment, for example, the use of SCONOX at other facilities in the United States.***

RESPONSE

Please see the Applicant's Objection to Interveners SAEJ/OCE's Third Set of Data Requests filed on August 18, 2003.

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DATA REQUEST

- 3. Please explain the chemistry of the PM from the cooling tower. How is that chemistry different than the PM from the rest of the project?***

RESPONSE

The chemistry of the PM₁₀ from the cooling tower would be very different than the chemistry of the PM₁₀ from the gas turbines. The cooling tower PM₁₀ is primarily salt crystal. The gas turbine PM₁₀ is primarily carbon soot.

The chemistry of the PM₁₀ from the cooling tower is expected to be about two-thirds sea salt (sodium chloride) by weight, with the remaining one-third being mostly other salts (made up of calcium, magnesium and/or potassium, combined with chloride or sulfate). The chemistry of the PM from the cooling tower is directly related to the total dissolved solids (TDS) in the cooling

tower drift, which is equal to the TDS in the cooling tower water. Table 8.14-1 of the Amendment contains the expected analysis of the solids dissolved in the cooling tower water after the water is concentrated five times in the tower. The total dissolved sodium ion concentration is estimated to be 1,805 mg/liter. For each liter of drift, this amount of sodium ion will combine with about 2,780 mg of chloride ion to form a total of 4,585 mg of sea salt (considering that the molecular weight of sodium is 23 and of chloride is 35.5). The total dissolved solids content is 7,000 mg/liter. Therefore, the sodium chloride represents about 65% by weight of the total PM_{10} . The other constituents of the PM_{10} may be calculated similarly. The very small amount of total suspended solids (TSS) in the cooling water (up to 15 mg/L) will not affect the above calculations by an appreciable amount.

The combustion turbine exhaust is the only other source of PM_{10} from the operation of this project. The chemistry of the PM_{10} from the combustion turbines is expected to be almost entirely unburned carbon from the natural gas fuel plus combustion products from the odorant that is added to the natural gas fuel for safety.

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DATA REQUEST

4. *What would be the change in number or intensity (in units of concentration) of exceedances of state standards of PM_{10} and $PM_{2.5}$ in San Francisco as a result of the cooling tower addition?*

RESPONSE

Table 8.1-7 in the Amendment provides the intensity, in units of concentration, of the exceedances of the state standards of PM_{10} and $PM_{2.5}$ in San Francisco (labeled as "Background"), the maximum modeled worst-case impacts from the emissions of PM_{10} and $PM_{2.5}$ from the project including the cooling tower, and their sums. Please note that Table 8.1-7 also shows the 24-hour $PM_{2.5}$ standard, which is a federal standard, which is not exceeded.

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DATA REQUEST

5. *Do you contend that the additional PM_{10} and $PM_{2.5}$ emissions from the cooling tower will have no health impact on nearby residents? If so, please explain.*

RESPONSE

Yes, the PM_{10} and $PM_{2.5}$ emissions from this project would have no significant health impact on nearby residents (see Section 8.1 of the Amendment and Responses to SAEJ and OCE Data Requests 31 through 34 below, which discuss impacts for the proposed project alternative including the cooling tower). See also responses to the following earlier data requests that discuss the findings of past analyses of the health impacts of PM_{10} for the once-through cooling project alternative (CCSF Data Request 56, SAEJ Data Request 159, and SAEJ Data Request 209) (URS 2001a and 2001b), which are summarized as follows in the response to SAEJ Data Request 209:

“Analyses have been performed in response to data requests from SAEJ (Data Requests 159 and 209) and the CCSF (Data Request 56) addressing the potential for health-related impacts from the PM₁₀ emissions from the proposed Unit 7 Power Plant. These analyses have used the findings and methodologies of the latest health studies authored by reputable experts in this field from across the country. Even after applying very conservative worst-case assumptions, these analyses have demonstrated that the Unit 7 Project will insignificantly impact health. Estimates of increased cardio-respiratory mortality, incidence of chronic bronchitis, and COPD hospital admissions have all been shown to be insignificant. The Applicant’s position that there will be no adverse health impacts from this project is therefore supported. No significant increase of any health problem has been shown to result from this project.”

References

URS Corporation, 2001a. Responses to City and County of San Francisco Data Requests (#1-100). January 2001.

URS Corporation, 2001b. Responses to Southeast Alliance for Environmental Justice Set 2 Data Requests (#156-209). May 2001.

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DATA REQUEST

- 6. Do you agree that on days that the area near the plant would ordinarily exceed the State 24-hour PM₁₀ standard that the cooling tower would increase the concentration of PM₁₀ measured? If not, why not.**

RESPONSE

Yes, please see Table 8.1-7 from the Amendment. This worst-case analysis assumes that the highest measured background concentrations would occur at the location of the modeled maximum impact from the project, and that they would both occur simultaneously. Therefore, it is a conclusion of the analysis that the project’s emissions will increase the PM₁₀ levels.

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DATA REQUEST

- 7. Please explain any additional health impacts that would result from the cooling tower increasing the level of PM₁₀ in any portion of Southeast San Francisco during days when the State 24-hour PM₁₀ standard is exceeded.**

RESPONSE

Any additional health impact caused by the project’s daily emissions of PM₁₀ would be imperceptible (see the response to SAEJ/OCE Data Request 5 above), regardless of whether the measured background level of PM₁₀ on that day is below or above the state 24-hour PM₁₀ standard. While the PM₁₀ standards are health-based, there is no scientific evidence to suggest

that once a standard is exceeded, a small incremental increase in PM_{10} concentration will have any larger effect than that same amount of increase would have if the standard were not exceeded. In other words, health effects of PM_{10} appear to have a direct, linear relationship in the range of concentrations close to the standards.

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DATA REQUEST

8. *Please explain any additional health impacts that would result from the cooling tower's impact on annual average PM_{10} and $PM_{2.5}$ levels in Southeast San Francisco, based upon the applicable state and federal standards.*

RESPONSE

Any additional health impact caused by the project's annual emissions of PM_{10} and $PM_{2.5}$ would be imperceptible, regardless of whether the measured background level of PM_{10} for the year is below or above the state annual 24-hour PM_{10} or the state annual $PM_{2.5}$ standard. See also the response to SAEJ/OCE Data Request 7.

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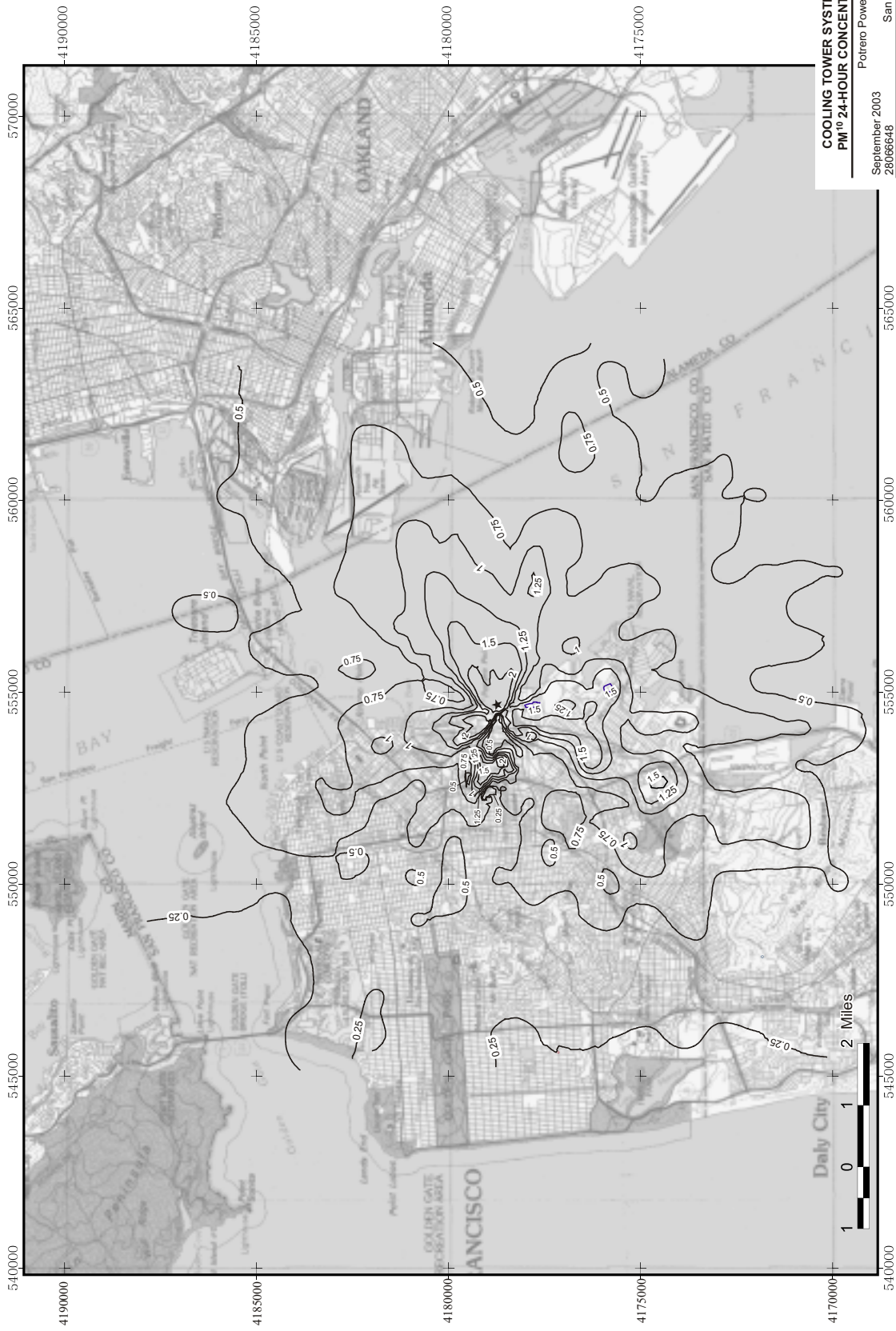
DATA REQUEST

9. *Please provide a plume map documenting the distribution of PM_{10} and $PM_{2.5}$ emissions from the cooling tower and the turbines.*

RESPONSE

The 24-hour and annual PM_{10} (and $PM_{2.5}$) lines of equal concentration (isopleths), based on modeling results that included emissions from the turbines and the cooling tower, are shown in SAEJ/OCE Figures 9-1 and 9-2, respectively. SAEJ/OCE Figure 9-1 shows the modeled distribution of maximum PM_{10} 24-hour concentrations at each receptor location. SAEJ/OCE Figure 9-2 shows the modeled distribution of PM_{10} for the annual period. The star in each figure shows the location of the maximum concentration modeled, which in both cases is located near the eastern edge of the facility.

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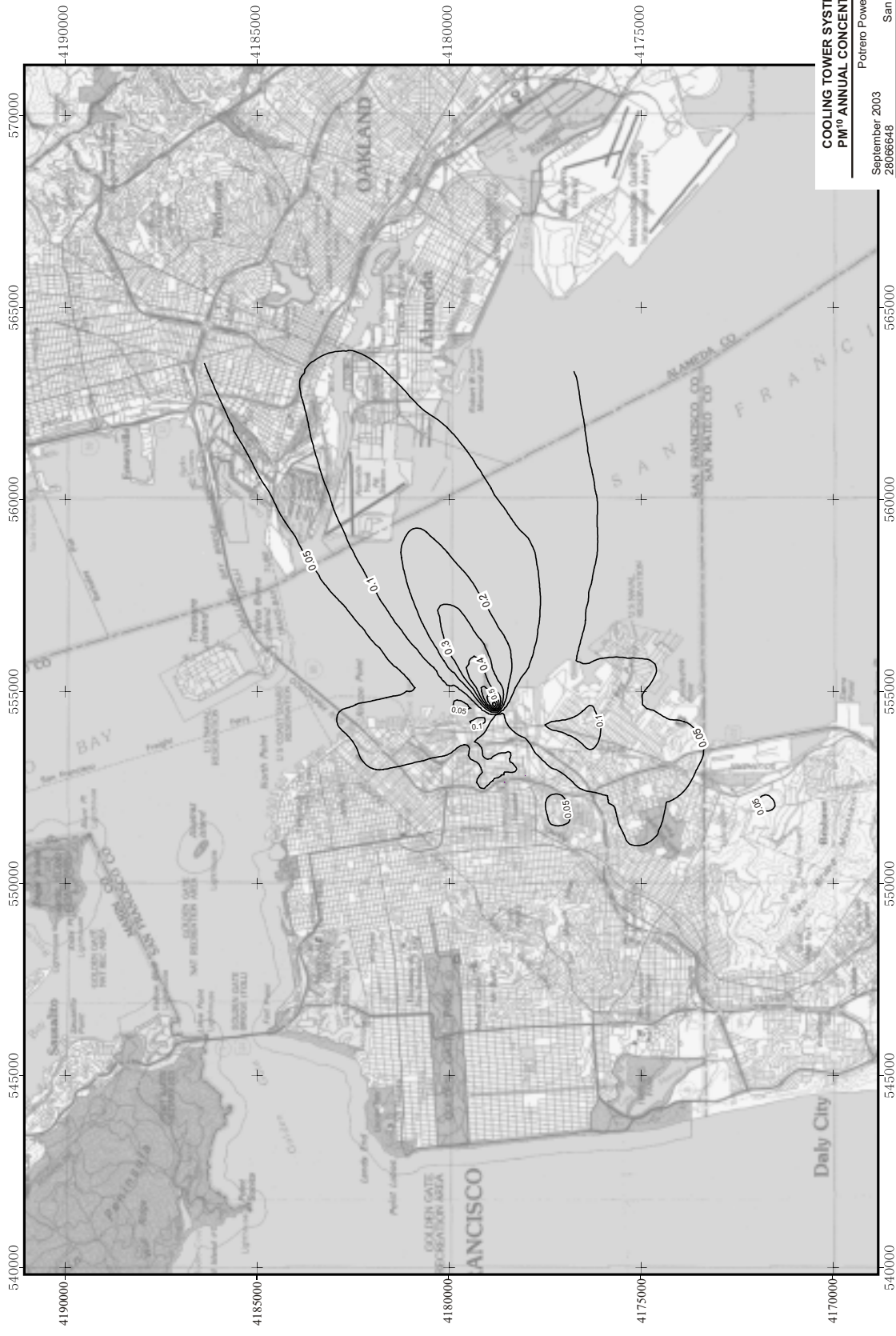
**COOLING TOWER SYSTEM AMENDMENT:
PM₁₀ 24-HOUR CONCENTRATIONS ($\mu\text{g}/\text{m}^3$)**

Potrero Power Plant Unit 7 Project
Mirant Potrero LLC
September 2003
28066648

San Francisco, California

SAE/JOCE FIGURE 9-1

URS



**COOLING TOWER SYSTEM AMENDMENT:
PM₁₀ ANNUAL CONCENTRATIONS ($\mu\text{g}/\text{m}^3$)**

Potrero Power Plant Unit 7 Project
Mirant Potrero LLC
September 2003
28066648 San Francisco, California

URS
SAE/JOCE FIGURE 9-2

DATA REQUEST

- 10. Do the cooling tower PM emissions disperse in a different manner than the PM emissions from the rest of the power plant during its operations? If so, how?**

RESPONSE

Dispersion is related to plume height, wind speed, stability of the atmosphere, distance downwind from the release point, and both the horizontal (crosswind) and vertical distance from the plume centerline. In almost all cases, the plume from the cooling tower and the plume from the gas turbines will experience identical wind speed, wind direction, and stability of the atmosphere. The cooling tower PM₁₀ emissions would be released into the atmosphere at a temperature about 100 degrees F cooler, at about two-thirds of the exit velocity, and about a 115-foot lower elevation than the gas turbine exhaust emissions. Therefore, for any non-zero wind speed, the cooling tower plume rise and the final plume height would be below that of the gas turbine exhaust. The cooling tower PM₁₀ emissions would be released at a very much lower initial concentration than the gas turbine exhaust PM₁₀ emissions, so they are much more diffuse from the start.

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DATA REQUEST

- 11. Please provide your analysis and all modeling, references and data in support of your answer to Data Request 4.**

RESPONSE

Please see Section 8.1 and Appendix A of the Amendment for a discussion of the data and all the modeling done to support the response to SAEJ/OCE Data Request 4, above, the determination of the maximum modeled impacts of PM.

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DATA REQUEST

- 12. Please describe at what locations the PM₁₀ emissions reductions, that are the source of the credits used for the cooling tower, occurred or will occur through the emissions offsets program.**

RESPONSE

The locations of the PM₁₀ emission reductions have not changed from the original AFC. However, the emissions reduction credit (ERC) certificate numbers issued by the BAAQMD change every time any portion of the credits are used or sold. SAEJ/OCE Table 12-1 provides a cross-reference of the ERC certificate numbers.

Table 12-1
Emission Reduction Certificate Numbers Cross Reference

Name and Location of Offset	Certificate Number in Original AFC	Subsequent Certificate Number(s) (Current Number in Bold)
Gaylord Container, Antioch	693	795, 808, 831
PG&E, Martinez	694	755, 809, 863
Hudson ICS, San Leandro	695	756

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DATA REQUEST

- 13. Will those offsets directly reduce PM_{10} concentrations in the area adjacent to the Potrero Power Plant when the cooling tower is in operation? If so, by what amount?**

RESPONSE

The offsets will directly reduce the emissions of PM_{10} in the Bay Area by an amount equal to the total PM_{10} emissions from the project, including the emissions from the cooling tower. The offsets offered are entirely in compliance with all applicable laws, ordinances and regulations (LORS).

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DATA REQUEST

- 14. Were these offsets or credits relied upon by you to determine that PM_{10} from the cooling tower will not have an impact on air quality and public health in Southeast San Francisco?**

RESPONSE

No, the offsets were not used in this way. The determination that PM_{10} impacts do not have any significant impact to air quality and public health was based on the modeled impacts that are shown in Table 8.1-7, which do not in any way consider any reduction in impacts from the offsets.

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DATA REQUEST

- 15. Table 8.1-9 (Revised Offset Package) lists the Certificate Number for the ERC Certificates you are planning to use as offsets. Please list the source of the ERCs for each certificate.**

RESPONSE

Please see the response to SAEJ/OCE Data Request 12.

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DATA REQUEST

- 16. Please provide the company names and locations that are the sources for the PM₁₀ credits relied upon for the cooling tower.**

RESPONSE

Please see the response to SAEJ/OCE Data Request 12. The offsets are provided in aggregate for the project. Therefore, offsets specific to the cooling tower are not itemized.

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DATA REQUEST

- 17. What is the basis for assuming for purposes of calculating air emissions from the cooling tower that the turbine will be operating at most at 50% capacity?**

RESPONSE

It may be that the commentor is not making a distinction between “emissions” and “concentrations.” The emissions in terms of pounds per day from either the gas turbines or from the cooling tower are based on full load operation because PM₁₀ emissions are the highest at full load operation. Ambient pollutant concentrations in terms of micrograms per cubic meter are the modeled ground level concentrations of the pollutant in the ambient air resulting from the dispersion of the emissions. The basis for modeling the gas turbine emissions was the screening study of the dispersion characteristics of the 11 different gas turbine operating conditions. This study (see the original AFC page 8.1-11 and Tables 8.1-13 and 8.1-14) showed that the ground level PM₁₀ concentrations are highest during the 50 percent load, 80 degree F case due to lower stack temperature and lower stack exit velocity. The modeling approach to determine the PM₁₀ concentrations from the gas turbines was not changed due to the introduction of the cooling tower source. Please see the response to SAEJ/OCE Data Request 24.

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DATA REQUEST

- 18. Why is the conservative assumption that the turbines operate at 100% capacity for purposes of your toxics risk assessment under public health not appropriate for your calculation of emissions for purposes of air quality and public health impacts from conventional pollutants such as PM_{10} and $PM_{2.5}$?**

RESPONSE

It is appropriate to conservatively estimate gas turbine emissions at 100 percent capacity as the worst case, both for the PM_{10} emissions for air quality impact analysis and for air toxic emissions for the public health impact analysis. That is why they were both done that way. It is also appropriate to model gas turbine PM_{10} and air toxic emissions as if the turbines were operating in the mode that causes the worst-case ground level concentrations. The screening study of the dispersion characteristics of the 11 different gas turbine operating conditions (see AFC page 8.1-11 and Tables 8.1-13 and 8.1-14) showed that the ground level PM_{10} impacts are highest during the 50 percent load, 80 degree F case due to lower stack temperatures and lower stack exit velocities. That is why impacts for PM_{10} and for public health were calculated this way. While it is conceivable that the two gas turbines might operate at 50 percent capacity for an entire day on any one given day, it is very unlikely that they would operate at 50 percent capacity throughout an entire year. Therefore, while coupling of these two worst-case approaches is conservative for both the 24-hour and the annual analyses, it is much more conservative for the annual case.

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DATA REQUEST

- 19. In Section 8.1.3 (Operations) you state you will reduce gas turbine operations to 85% and duct burner operation down to 2,200 hours per year. Please provide the permit requirement you are proposing to include to enforce this change and the reporting or monitoring that you will provide to allow agencies and the public to verify compliance.**

RESPONSE

See revised FDOC condition number 16 in Appendix E of the cooling tower permit application submitted to BAAQMD. This document is available in an electronic format on the CEC web site at:

<http://www.energy.ca.gov/sitingcases/potrero/documents/index.html>

Fuel consumption is used as a surrogate for operating time.

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DATA REQUEST

- 20. In Section 8.1.5 (Mitigation) you state that emission reduction credits will be used to offset PM_{10} emissions. Do you have an obligation under any law to offset $PM_{2.5}$? Will you offset $PM_{2.5}$ regardless of any legal requirements?**

RESPONSE

The answer to both questions is no. There is no legal obligation to offset $PM_{2.5}$ emissions and the Applicant has not offered any.

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DATA REQUEST

- 21. In Section 8.1.8 (Permits Required and Permitting Schedule) you state that the modification of the Final DOC should be issued within 30 to 60 days after receipt of the complete application. What is your basis for this statement? Have you had any communications with the BAAQMD regarding the basis for this statement or the Final DOC modification? If so, please describe those communications.**

RESPONSE

This estimate was based on discussions with the staff of the BAAQMD during a pre-application meeting held on June 24, 2003 in their offices.

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DATA REQUEST

- 22. In Section 8.1.2.1 (Project Site Construction Emissions) you state that Pier 96, the off-site laydown area, is paved and activity within the laydown area would not generate significant air emissions. Does this statement apply to Pier 80, the other proposed laydown area? If neither site becomes available for laydown what are the alternative sites? What are the characteristics of those sites?**

RESPONSE

Pier 80 is also paved. The applicant has identified two alternative sites for off-site laydown purposes. This is adequate for CEQA purposes. If neither site is ultimately used, and a completely different site is found, it is likely that this site would have characteristics similar to the two identified sites because a paved site is more desirable, being more suitable for equipment laydown.

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DATA REQUEST

- 23. Please state the basis for the statement that the odor control system for the on-site recycled water treatment plant will emit only POC. Please state the basis for the**

statement that less than 10 pounds per day of POC will be emitted from the odor control system. Why were POC emissions not modeled for impacts to air quality?

RESPONSE

There is no reason to believe emissions of PM₁₀, PM_{2.5}, NO_x, SO₂ or CO will be in the exhaust of the odor control system. It is expected that only POC materials stripped by the aeration air will be present. The emissions from the odor control system are quantified in Appendix C1 of the Amendment. POC modeling was not required by regulation. POC has no ambient air quality standards. POC emissions from the odor control system would be offset (see Table 8.1-6 of the Amendment). Drawings of the odor control system may be found in Appendix B of the cooling tower permit application submitted to BAAQMD. The document is available on the CEC web site at:

<http://www.energy.ca.gov/sitingcases/potrero/documents/index.html>

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DATA REQUEST

24. Reference Table 8.1-7 of the Applicant's July 2003 Cooling Tower System Amendment.

- a. Please specify the basis for the assumption in the derivation of the 24-hour PM₁₀ and PM_{2.5} concentrations that the two turbines will only operate at 50% load.***
- b. Please provide copies of any analyses, assessments, evaluations and studies which form the basis for the assumption that routine plant operation will reflect two turbines operating at an average 50% load over a 24-hour period.***
- c. Please state whether Mirant is willing to commit to not operating the proposed facility so that the two turbines operate at more than an average 50% load level over a 24-hour period.***
- d. Please provide a revised Table 8.1-7 which reflects the two turbines operating at (a) a 75% load, and (b) a 100% load over a 24-hour period.***

RESPONSE

The screening study of the dispersion characteristics of the 11 different gas turbine operating conditions showed that the ground level PM₁₀ concentrations are highest during the 50 percent load, 80 degree F case (see the original AFC, page 8.1-11 "Turbine Impact Screening Modeling" and Tables 8.1-13 and 8.1-14). Therefore, the PM₁₀ impact analysis captured the worst-case pollutant dispersion condition by using these as modeling conditions. The commenter is incorrect in his or her assertion that Mirant has made any representation by virtue of this analysis to operate exclusively at 50 percent load. Table 8.1-13 of the original AFC includes 75 percent and 100 percent load cases.

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DATA REQUEST

25. Reference Table 8.1-6 of the Applicant's July 2003 Cooling Tower System Amendment.

- a. Please provide copies of the analyses, assessments, evaluations and studies that form the basis for the assumption in the calculation of the annual emissions of criteria pollutants in Table 8.1-6 that in a typical year the turbines will experience "28 cold startups, 11 hot startups, and 39 shutdowns, and 4,400 hours at 100% duct burner capacity with the balance of 85% of the year operating at 100% load at 55 degrees F."*
- b. Please specify whether the assumed numbers of cold starts, etc., quoted in part a. of this question are for each turbine or for all of the turbines in the proposed project.*
- c. Please reconcile the assumptions concerning annual turbine operations, startups and shutdowns used in the calculation of criteria pollution emissions in Table 8.1-6 with the assumption used in Table 8.1-7 that routine plant operation will involve two turbines operating at an average 50% load over a 24-hour period.*

RESPONSE

(a and b) The only information that has changed in the Cooling Tower System Amendment relative to the original AFC is the overall plant annual usage of 85% and the duct burner hours of operation at 2,200 hours per year per turbine train. These two new values are the result of more refined analysis of anticipated Unit 7 operations. It is unreasonable to assume that a power plant of this size and technology would operate over its entire lifetime without any shutdowns and/or breakdowns. It is unreasonable that any plant would operate the duct burners nearly all year, as the efficiency of the plant is reduced when duct burners are used.

The number of startups and shutdowns that the turbines will undergo was not changed in the cooling tower amendment and has been in the record of this project for three years.

(c) No reconciliation is required. Please see the responses to SAEJ/OCE Data Requests 17 and 24. Table 8.1-6 provides emissions estimates. Emissions are worst case if full load operation is used. Table 8.1-7 provided modeled PM₁₀ concentrations. Modeled PM₁₀ concentrations are worst case when 50 percent stack parameters are used.

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BACKGROUND [26 THROUGH 30]

Your amendment includes proposals to build a cooling tower as an alternative to the original once-through cooling system. The following questions seek information relevant to the Applicant's evaluation of the economics of the cooling tower.

DATA REQUEST

- 26. Reference Section 2.1.2 and Table 2-1 of the Applicant's July 2003 Cooling Tower System Amendment.**
- a. Please provide copies of the analyses, assessments, reports and studies that form the basis for the cost conclusions summarized in Section 2.1.2 and presented in Table 2-1.*
 - b. Please provide copies of the workpapers used in the derivation of the dollar figures presented in Section 2.1.2 and Table 2-1, including, but not limited to, Excel readable copies of the input and output files used.*
 - c. Please provide copies of the analyses, assessments, reports and studies prepared by or for the Applicant which have examined or addressed the economic difference between once-through cooling and wet/dry cooling tower systems for Potrero Unit 7.*
 - d. Please identify the assumptions made in the derivation of the cost figures in Table 2-1. Please also provide the source documents that formed the basis for those assumptions and the workpapers used in the determination of those assumptions.*
 - e. Please provide copies of the assessments, analyses, evaluations and quantifications of the difference in Operations and Maintenance (O&M) costs between a wet/dry cooling tower system for Potrero Unit 7 and a once-through cooling system.*
 - f. Please provide copies of the assessments, analyses, evaluations and quantifications of the heat rate difference(s) that would result from the use of a wet/dry cooling tower system for Potrero Unit 7 instead of a once-through cooling system.*
 - g. Please provide copies of the assessments, analyses, evaluations and quantifications of any capacity penalties that would result from the use of a wet/dry cooling tower system for Potrero Unit 7 instead of a once-through cooling system.*
 - h. Please specify the discount rate that was used to derive the present value costs shown in Table 2-1. Please also provide (1) the source documents which formed the basis for using this discount rate, and (2) any workpapers used for this calculation including, but not limited to, Excel readable input and output data files.*

- i. Please specify which of Mirant's existing generating units have wet/dry cooling tower systems. Please specify for each such unit (1) the annual O&M cost of the wet/dry cooling system, (2) the heat rate penalties experienced because of the use of the wet/dry cooling tower system, and (3) any capacity penalties experienced because of the use of the wet/dry cooling tower system. Please provide the source documents for this information.*
- j. Please specify which of Mirant's generating units under construction or undergoing licensing review are planned to have wet/dry cooling tower systems. Please specify for each such unit (1) the annual O&M cost of the wet/dry cooling system, (2) the heat rate penalties expected to be experienced because of the use of the wet/dry cooling tower system, and (4) any capacity penalty expected to be experienced because of the use of the wet/dry cooling tower system. Please provide the source documents that provide the basis for this information.*

RESPONSE

- a. and b. The cost development is based on a combination of manufacturer input and proprietary Sargent & Lundy cost data.
- c. The difference is simply a subtraction of the once-through cooling and wet/dry cooling tower system costs.
- d. A plant life of 25 years and a discount rate of 13.5% were considered for the equivalent capital investment cost derivations.
- e. The same approach was used for developing O&M costs for a wet/dry tower cooling system and a once through cooling system. The only difference is that the wet/dry cooling system has more components to maintain.
- f. The table below provides the difference between the two expected heat rates for Potrero Unit 7 with either a once-through cooling system and the wet/dry cooling tower system in place. The heat rate differences result from condenser inlet temperature differences and auxiliary power consumption differences.

Condition	% Increase in HR Relative to Once-Through-System (btu/kwh)
Summer (80°F ambient air, 40% relative humidity, 59.1°F Bay Water)	82
ISO (59°F, 60% relative humidity, 59.1°F Bay Water)	46
Winter (35°F, 50% relative humidity, 44.1°F Bay Water)	49

- g. The cooling tower manufacturer supplied tower outlet temperatures (higher than bay water) and tower fan auxiliary power use resulted in the higher capacity penalties for using the wet/dry tower.
- h. The discount rate used in the equivalent capital investment (ECI) analysis was 13.5%. This value is Mirant's typical value used for these types of projects.
- i. The Applicant does not own any existing generating units with wet/dry cooling tower systems.
- j. The Applicant does not own any generating units which are under construction or undergoing licensing review that are planned to have wet/dry cooling tower systems.

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DATA REQUEST

- 27. Reference page 2-6 of the Applicant's July 2003 Cooling Tower System Amendment. Please provide copies of any assessments, analyses, evaluations, reports and studies, prepared by or for the Applicant, which examined the use of a combined wet/dry cooling tower system for both Potrero Unit 3 and Unit 7.**

RESPONSE

No assessments were made of a combined cooling tower system for Potrero Unit 3 and Unit 7. As stated in the Amendment, the cooling tower system applies only to Unit 7. Unit 3 would continue to use once-through cooling.

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DATA REQUEST

- 28. Reference page 2-6 of the Applicant's July 2003 Cooling Tower System Amendment. Please provide copies of any assessments, analyses, evaluations, reports and studies, prepared by or for the Applicant, which examined the use of either a combined wet or a combined dry cooling tower system for both Potrero Unit 3 and Unit 7.**

RESPONSE

No assessments were made of a combined cooling tower system for Potrero Unit 3 and Unit 7. As stated in the Amendment, the cooling tower system applies only to Unit 7. Unit 3 would continue to use once-through cooling.

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DATA REQUEST

- 29. Reference page 2-6 of the Applicant's July 2003 Cooling Tower System Amendment. Please provide copies of any assessments, analyses, evaluations, reports and studies, prepared by or for the Applicant, which investigated the engineering and technical benefits or problems associated with the use of a combined wet/dry cooling tower system for both Potrero Unit 3 and Unit 7.**

RESPONSE

No assessments were made of a combined cooling tower system for Potrero Unit 3 and Unit 7. As stated in the Amendment, the cooling tower system applies only to Unit 7. Unit 3 would continue to use once-through cooling.

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DATA REQUEST

- 30. Reference page 2-6 of the Applicant's July 2003 Cooling Tower System Amendment.**
- a. Please provide copies of any assessments, analyses, evaluations, reports and studies, prepared by or for the Applicant, which investigated possible locations on the existing Potrero site for a combined wet/dry cooling tower system for both Potrero Unit 3 and Unit 7.**
 - b. Please provide copies of any assessments, analyses, evaluations, reports and studies, prepared by or for the Applicant, which investigated how a combined wet/dry cooling tower system for both Potrero Unit 3 and Unit 7 could be constructed on the existing Potrero site.**

RESPONSE

30 (a. and b.) No assessments were made of a combined cooling tower system for Potrero Unit 3 and Unit 7. As stated in the Amendment, the cooling tower system applies only to Unit 7. Unit 3 would continue to use once-through cooling.

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BACKGROUND [31 THROUGH 37]

Your amendment includes proposals to build a cooling tower with additional air pollution and odors as well as amendments governing the operations of the turbines and other air pollution sources for the project. The following questions under Public Health seek further information regarding these pollutants and their potential public health impacts.

DATA REQUEST

- 31. *Please modify your prior PM₁₀ dispersion modeling analysis provided in response to SF DR #56 and other requests to include the cooling tower emissions and the recently adopted state standards for PM₁₀ and PM_{2.5} to provide an updated health analysis of the total impacts from the project.***

RESPONSE

Potential health impacts of PM₁₀ concentrations resulting from the Unit 7 project configured for the once-through cooling alternative were addressed in the responses to three past data requests (see the responses to CCSF Data Request 56 (URS 2001a), SAEJ Data Request 159 and SAEJ Data Request 209 (URS 2001b) for complete discussions of the analyses performed, assumptions made, and limitations of the applicability of the approach used). We assume these are what the commenter meant by "...SF DR #56 and other requests..." in the current data request.

The results of the three specific data requests, modified to include the cooling tower system amendment and the emission reduction, are shown in SAEJ/OCE Tables 31-1, 31-2, and 31-3. The conclusion that may be drawn from these tables is identical to the conclusion reported in the original analysis, which is:

"The Applicant's position that there will be no adverse health impacts from this project is therefore supported. No significant increase of any health problem has been shown to result from this project." (See the response to SAEJ Data Request 209.)

The three past responses addressed cardio-respiratory mortality, hospital admissions for chronic obstructive pulmonary disease (COPD), and chronic bronchitis incidence. All three responses used modeled PM₁₀ concentrations from Unit 7 throughout southeast San Francisco as input to the results of then recent studies where the potential for the various health impacts listed above were quantified.

However, modeled PM₁₀ concentrations in southeast San Francisco have slightly changed for the cooling tower system alternative because of additional PM₁₀ from the cooling tower and reduced annual PM₁₀ emissions from the gas turbines. The updated modeling analysis shows that the regional PM₁₀ 24-hour average concentration in southeast San Francisco rose about 20 percent over the once-through cooling alternative while the regional PM₁₀ annual average concentration dropped about 5 percent. These changes in modeled concentrations would, by themselves, cause changes of equal magnitude in the health effects related to PM₁₀. However, since the original data request responses were prepared, the results of a great many of the studies on PM₁₀ health effects have been reanalyzed because of errors found in the original statistical approach. Based on the reanalysis of the studies, the factor used to assess the effect

of PM₁₀ on cardio-respiratory mortality dropped 40 to 50 percent and the factors used to assess the effects of PM₁₀ on COPD hospital admissions and on chronic bronchitis dropped 8 to 10 percent¹. These decreases are not accounted for in SAEJ/OCE Tables 31-1, 31-2, and 31-3, but would tend to counteract and offset any increases in concentration.

The recently adopted state PM₁₀ and PM_{2.5} standards are not related to the calculation of the potential health effects described above. Therefore, neither the health impacts calculated in the past, nor those calculated in the following tables, require modification due to the recently adopted changes to state PM₁₀ or PM_{2.5} standards.

References

URS Corporation, 2001a. Responses to City and County of San Francisco Data Requests (#1-100). January 2001.

URS Corporation, 2001b. Responses to Southeast Alliance for Environmental Justice Set 2 Data Requests (#156-209). May 2001.

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¹ See "Revised Analyses of Time-Series Studies of Air Pollution and Health," The Health Effects Institute, May 2000. A synopsis of this report may be found on the HEI website at:
<http://www.healtheffects.org/pubs/st-timeseries.htm>

**SAEJ/OCE Table 31-1
Cardio-Respiratory Mortality of the Potrero Power
Plant Unit 7 with Cooling Tower System**

Census Tract	Centerpoint		PM ₁₀ Concentration		Population	Burden	
	UTM (x)	UTM (y)	24-Hour	Annual		24-Hour	Annual
017602	553,026	4,182,394	0.839	0.05	362	2.3E-06	4.7E-05
017698	552,002	4,181,385	0.399	0.03	3,879	1.2E-05	3.0E-04
0177	551,798	4,179,978	0.439	0.03	1,910	6.4E-06	1.4E-04
0178	552,313	4,181,134	0.386	0.03	3,797	1.1E-05	3.2E-04
017901	553,665	4,181,988	1.112	0.06	2,429	2.1E-05	4.3E-04
0180	552,574	4,180,755	0.426	0.03	1,303	4.2E-06	1.2E-04
020198	551,110	4,179,961	0.417	0.02	4,844	1.5E-05	2.9E-04
0208	551,141	4,179,069	0.323	0.03	6,982	1.7E-05	5.0E-04
0209	551,227	4,178,240	0.499	0.03	4,517	1.7E-05	3.2E-04
0226	554,078	4,179,137	3.449	0.09	604	1.6E-05	1.4E-04
0227	553,072	4,178,800	1.867	0.09	9,232	1.3E-04	2.2E-03
0228	551,916	4,179,054	0.306	0.03	11,191	2.6E-05	8.6E-04
0229	552,010	4,178,162	0.675	0.03	11,153	5.7E-05	8.3E-04
0230	553,128	4,176,301	1.723	0.09	9,205	1.2E-04	2.4E-03
0231	554,550	4,176,256	2.200	0.11	8,383	1.4E-04	2.6E-03
0232	554,035	4,175,573	0.939	0.08	3,656	2.6E-05	7.6E-04
0233	553,089	4,175,323	1.158	0.06	1,189	1.0E-05	2.0E-04
0234	553,785	4,174,885	0.860	0.07	3,006	2.0E-05	5.6E-04
0251	552,213	4,177,357	0.964	0.07	3,172	2.3E-05	5.7E-04
0252	551,642	4,177,380	0.989	0.05	5,233	3.9E-05	7.4E-04
0253	551,071	4,177,404	0.450	0.03	4,146	1.4E-05	2.9E-04
0254	551,306	4,176,434	0.695	0.04	10,894	5.8E-05	1.1E-03
0256	551,034	4,175,636	0.948	0.05	4,914	3.5E-05	6.3E-04
0257	552,158	4,175,957	0.701	0.05	7,158	3.8E-05	9.6E-04
0258	552,690	4,174,916	1.321	0.06	1,761	1.8E-05	2.9E-04
0259	551,931	4,175,057	0.693	0.05	3,816	2.0E-05	5.1E-04
0260	550,210	4,174,893	0.759	0.04	15,327	8.8E-05	1.6E-03
0263	549,835	4,173,735	0.680	0.04	11,050	5.7E-05	1.1E-03
0264	552,315	4,174,032	1.062	0.05	14,276	1.2E-04	1.8E-03
0605	551,196	4,174,392	0.731	0.05	3,399	1.9E-05	4.9E-04
0606	555,709	4,175,150	0.945	0.06	404	2.9E-06	6.2E-05
0607	553,780	4,180,589	1.019	0.07	152	1.2E-06	3.1E-05
0609	553,887	4,177,662	0.793	0.08	195	1.2E-06	4.4E-05
0610	554,121	4,173,931	1.402	0.06	1,861	2.0E-05	3.2E-04
				TOTAL	175,400	1.2E-03	2.4E-02

See the response to CCSF Data Request 56 for basis.

SAEJ/OCE Table 31-2
Chronic Obstructive Pulmonary Disease (COPD)
Admissions Burden of the Potrero Power Plant Unit 7 Project
With the Cooling Tower System

Census Tract	Centerpoint		24-Hour PM ₁₀ Concentration	Population Age 65 and Over	COPD Admissions Burden
	UTM (x)	UTM (y)			
017602	553,026	4,182,394	0.839	9	6.78E-07
017698	552,002	4,181,385	0.399	456	1.63E-05
0177	551,798	4,179,978	0.439	161	6.34E-06
0178	552,313	4,181,134	0.386	1,381	4.79E-05
017901	553,665	4,181,988	1.112	58	5.79E-06
0180	552,574	4,180,755	0.426	7	2.68E-07
020198	551,110	4,179,961	0.417	516	1.93E-05
0208	551,141	4,179,069	0.323	729	2.12E-05
0209	551,227	4,178,240	0.499	371	1.66E-05
0226	554,078	4,179,137	3.449	66	2.04E-05
0227	553,072	4,178,800	1.867	830	1.39E-04
0228	551,916	4,179,054	0.306	826	2.27E-05
0229	552,010	4,178,162	0.675	959	5.81E-05
0230	553,128	4,176,301	1.723	1,458	2.25E-04
0231	554,550	4,176,256	2.200	664	1.31E-04
0232	554,035	4,175,573	0.939	629	5.30E-05
0233	553,089	4,175,323	1.158	138	1.43E-05
0234	553,785	4,174,885	0.860	369	2.85E-05
0251	552,213	4,177,357	0.964	403	3.49E-05
0252	551,642	4,177,380	0.989	538	4.78E-05
0253	551,071	4,177,404	0.450	426	1.72E-05
0254	551,306	4,176,434	0.695	1,206	7.52E-05
0256	551,034	4,175,636	0.948	688	5.85E-05
0257	552,158	4,175,957	0.701	1,226	7.72E-05
0258	552,690	4,174,916	1.321	216	2.56E-05
0259	551,931	4,175,057	0.693	657	4.09E-05
0260	550,210	4,174,893	0.759	2,423	1.65E-04
0263	549,835	4,173,735	0.680	1,715	1.05E-04
0264	552,315	4,174,032	1.062	1,576	1.50E-04
0605	551,196	4,174,392	0.731	220	1.44E-05
0606	555,709	4,175,150	0.945	10	8.48E-07
0607	553,780	4,180,589	1.019	23	2.10E-06
0609	553,887	4,177,662	0.793	10	7.12E-07
0610	554,121	4,173,931	1.402	272	3.42E-05
			TOTAL	21,236	1.68E-03

See the response to SAEJ Data Request 159 for basis.

SAEJ/OCE Table 31-3
Chronic Bronchitis Burden of the Potrero Power Plant Unit 7
With the Cooling Tower System

Census Tract	Centerpoint		Annual PM ₁₀ Concentration	Population Age 30 and over	Chronic Bronchitis Burden
	UTM (x)	UTM (y)			
017602	553,026	4,182,394	0.047	264	5.46E-04
017698	552,002	4,181,385	0.028	2,803	3.41E-03
0177	551,798	4,179,978	0.026	1,048	1.19E-03
0178	552,313	4,181,134	0.030	2,824	3.76E-03
017901	553,665	4,181,988	0.064	1,360	3.84E-03
0180	552,574	4,180,755	0.033	720	1.06E-03
020198	551,110	4,179,961	0.022	2,677	2.55E-03
0208	551,141	4,179,069	0.026	3,698	4.23E-03
0209	551,227	4,178,240	0.026	2,552	2.90E-03
0226	554,078	4,179,137	0.085	380	1.43E-03
0227	553,072	4,178,800	0.085	6,010	2.27E-02
0228	551,916	4,179,054	0.028	5,648	6.94E-03
0229	552,010	4,178,162	0.027	5,166	6.12E-03
0230	553,128	4,176,301	0.094	5,414	2.24E-02
0231	554,550	4,176,256	0.111	3,651	1.79E-02
0232	554,035	4,175,573	0.075	2,180	7.22E-03
0233	553,089	4,175,323	0.061	648	1.74E-03
0234	553,785	4,174,885	0.067	1,562	4.62E-03
0251	552,213	4,177,357	0.065	2,061	5.92E-03
0252	551,642	4,177,380	0.051	3,324	7.51E-03
0253	551,071	4,177,404	0.025	2,566	2.88E-03
0254	551,306	4,176,434	0.037	6,256	1.03E-02
0256	551,034	4,175,636	0.046	2,959	6.07E-03
0257	552,158	4,175,957	0.048	4,283	9.17E-03
0258	552,690	4,174,916	0.059	1,002	2.61E-03
0259	551,931	4,175,057	0.048	2,374	5.05E-03
0260	550,210	4,174,893	0.036	9,035	1.46E-02
0263	549,835	4,173,735	0.035	6,729	1.05E-02
0264	552,315	4,174,032	0.046	7,280	1.49E-02
0605	551,196	4,174,392	0.052	1,505	3.45E-03
0606	555,709	4,175,150	0.056	161	3.95E-04
0607	553,780	4,180,589	0.073	89	2.89E-04
0609	553,887	4,177,662	0.081	87	3.10E-04
0610	554,121	4,173,931	0.061	1,110	2.99E-03
			TOTAL	99,426	2.11E-01

See the response to SAEJ Data Request 209 for basis.

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DATA REQUEST

- 32. *In your analysis of PM emissions from the cooling tower, did you consider all cardiac and respiratory impacts, including mortality, on a daily or cumulative basis? Please explain.***

RESPONSE

The response to CCSF Data Request 56 (URS 2001) and the results in SAEJ/OCE Table 31-1 above are for cardio-respiratory mortality only, both on a 24-hour and annual basis, from the project only. Cumulative analyses and analysis of all cardiac and respiratory impacts cannot be performed using the relationships available.

Reference

URS Corporation, 2001. Responses to City and County of San Francisco Data Requests (#1-100). January 2001.

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DATA REQUEST

- 33. *Please explain how many additional hospital days would result from the PM exposure from the cooling tower emissions to any residents in the San Francisco Bay Area.***

RESPONSE

See SAEJ/OCE Table 31-2 above. Less than one additional hospital day would result in southeast San Francisco. It is not meaningful to scale this analysis to include the San Francisco Bay Area. Modeled PM₁₀ concentrations in areas farther away from the source than those already included would be too low to cause the numerical value of the calculated impact to significantly increase, let alone increase to a level of significance.

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DATA REQUEST

- 34. *Please explain how many additional hospital days would result from the PM exposure from the cooling tower emissions to any residents in Southeast San Francisco.***

RESPONSE

See SAEJ/OCE Table 31-2 above. Less than one additional hospital day would result in southeast San Francisco.

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DATA REQUEST

35. *Please explain the public health impacts from cooling tower emissions resulting from other constituents in the secondary effluent water that will be provided by San Francisco from the Southeast Water Pollution Control Plant, including prescription drugs, non-prescription drugs, personal care products, hormones, endocrine disruptors, pathogens, including bacteria, viruses, and prions, and all other biological and chemical constituents.*
36. *Will the on-site recycled water treatment plant treat the secondary effluent water provided by San Francisco from the Southeast Water Pollution Control Plant for prescription drugs, non-prescription drugs, personal care products, hormones, endocrine disruptors, pathogens, including bacteria, viruses, and prions, and all other biological and chemical constituents. If so, please explain. If not, why not?*

RESPONSE [35 and 36]

The secondary effluent water supplied from the SEWPCP would be tertiary-treated on site and would remove all listed materials. Therefore, no significant public health impacts would result from the cooling tower emissions.

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DATA REQUEST

37. *In your cancer risk assessment for the entire project, did you consider cancer risk from smog creating chemicals and PM? From all of the biological and chemical constituents of the cooling tower emissions? If those risks are included, what would be the cancer risk from the entire project with the cooling tower?*

RESPONSE

The health risk assessment did not treat the ozone precursors (NO_x and VOC) or PM as carcinogens because they are not identified as carcinogens by CAPCOA. The health risk assessment did include all of the toxic air contaminants emitted by the cooling tower. The cancer risk from the entire project is shown in Table 8.6-3 of the Amendment.

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BACKGROUND [38 through 43]

Your proposal seeks to provide an alternative to the original once-through cooling system but fails to include a dry cooling proposal. The following questions seek information relevant to the Applicant's evaluation of these alternatives.

DATA REQUEST

- 38. *Please explain how the cooling tower is feasible if San Francisco does not agree to provide the water?***

RESPONSE

The cooling tower would not be feasible if the City and County of San Francisco does not agree, and cannot be compelled to provide wastewater.

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DATA REQUEST

- 39. *Please explain which is more feasible, a cooling tower which depends on water that is to be provided by San Francisco, or a dry cooling system?***

RESPONSE

The factors affecting the feasibility of the proposed cooling tower and a dry cooling system are very different, making it impossible to determine which is "more feasible." The inability to obtain wastewater from the City and County of San Francisco, and possibly the additional costs associated with the alternative, would make the cooling tower infeasible. At this time, it appears as though the cost associated with the dry cooling system would almost certainly make this alternative infeasible. Environmental impacts associated with the dry cooling system may also affect its feasibility. Given the different factors that affect the feasibility of the two alternatives, it is impossible to rank them relative to each other.

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DATA REQUEST

- 40. *Please explain why Mirant chose to pursue a cooling tower alternative rather than a dry cooling system?***

RESPONSE

At this time, the cost of a dry cooling system would make the project infeasible, and therefore it was not proposed.

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DATA REQUEST

- 41. *Is a dry cooling system feasible for this project? If not, please explain why it is not.***

RESPONSE

Please see the responses to SAEJ/OCE Data Requests 39 and 40.

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DATA REQUEST

- 42. *Given Mirant's application for bankruptcy protection, please explain the economic feasibility of the cooling tower alternative given its additional cost over once-through cooling.***

RESPONSE

Please see the Applicant's response to the August 8, 2003 Ruling and Order filed in this matter on August 27, 2003.

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DATA REQUEST

- 43. *Please explain the reliability differences in using a cooling tower as opposed to once through cooling or dry cooling.***

RESPONSE

Please see the responses to CEC Data Requests 225 and 226 with regard to reliability.

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BACKGROUND [44 through 49]

The amendment states that there will be visible plumes during the day and night from this project but contends they are insignificant. The following questions request information regarding the nature and significance of these plumes.

DATA REQUEST

- 44. *When you state that there will be a relatively low number of viewers present in the early pre-dawn hours where plumes are most like to occur, approximately how many people in the urbanized metropolitan area of the San Francisco Bay Area do you estimate will be able to see the plumes per year?***

RESPONSE

The Applicant has not made this estimation, and does not believe that it is necessary to quantify the number of viewers to arrive at the conclusion that the number would be relatively low.

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DATA REQUEST

- 45. *When you state that plumes are less visible during the night, please explain whether the plumes are nevertheless visible and how they will appear?***

RESPONSE

As noted in the Amendment, the majority of night time plumes would occur between midnight and 5 a.m. When they occur, these plumes would be visible to the extent that they are illuminated by ambient night time lighting. Night time plumes would be inherently less visible than daytime plumes because the upper surfaces of the plume would not be illuminated and there would be less contrast with the night sky. Because of the ambient artificial lighting, night plumes would appear less bright than daylight, sunlit plumes. Potential sources of night lighting would include the Potrero Power Plant facilities, city street lights, and facilities in the vicinity that use night lighting.

Lighting from the Potrero Power Plant site would be minimized, to the extent consistent with safety requirements. The external portion of the cooling tower structure (directly under the plume) would have few lighting requirements, beyond those needed for safety and security. Motion-activated lighting would be used where a constant light is not required.

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DATA REQUEST

- 46. *In relying upon the Tesla Power Project April 2003 CEC Staff Report for your significance criteria for plume visual impacts, what is the authority for the staff's significance criteria?***

RESPONSE

We respectfully point out that the reference to the Tesla Power Project on page 8.11-4 in the Amendment did not define a criterion for visible plume significance. It did include a criterion for determining when a visible plume would be considered "infrequent" and therefore not require a plume study.

The Applicant does not know the authority for the staff's definition of "infrequent." However, this same criterion has been used during discussions with the staff in the Contra Costa Unit 8 Project (00-AFC-1) as well as the Tesla Power Project as referenced.

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DATA REQUEST

- 47. *Did you consider whether visual impacts in the Tesla area would be comparable to San Francisco? If so, please explain. If not, why not?***

RESPONSE

Yes. The Applicant concluded that the visual impact on a viewer in the Tesla area would be comparable to the visual impact on a viewer in the San Francisco area. The Applicant is not aware of any basis upon which to distinguish the visual sensitivity of viewers in San Francisco relative to viewers in Tesla.

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DATA REQUEST

- 48. *Did you consider whether property values in San Francisco are equally affected by visual impacts as property values in the Tesla area? If so, please explain. If not, why not?***

RESPONSE

Yes. Impacts on property values are a function of the reaction of viewers to the visual element. As discussed above, since viewer sensitivity is expected to be the same in the Tesla area and the San Francisco area, the impacts on property values are expected to be the same as well.

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DATA REQUEST

- 49. Do you contend that visual impacts from plumes are not affected by the nature or quality of the particular geographical area impacted by the plumes? If so, please explain.**

RESPONSE

We contend that the analysis that has been applied in other projects undergoing review by the CEC, including the Tesla project, is appropriate and applicable to the Potrero Unit 7 project.

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**Responses to Communities for a Better Environment
Data Requests 1-68 (Second Set)**

BACKGROUND [1 through 3]

The Applicant requests that the Unit 7 project be certified with the once-through cooling system and hybrid.

DATA REQUEST

- 1. What legal authority allows the applicant to have to two different cooling systems certified for the same project?***

RESPONSE

Nothing in the Warren-Alquist Act, or the regulations promulgated thereunder, precludes an applicant from proposing a project that includes alternative configurations. The California Energy Commission has previously certified projects with alternative configurations. For example, the High Desert Power Project, 97-AFC-1, was certified with alternative combustion turbine technologies (General Electric and Westinghouse).

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DATA REQUEST

- 2. What criteria will the applicant use to determine which cooling system will actually be used with Unit 7?***

RESPONSE

The Applicant's decision regarding which of the cooling system alternatives to implement would depend on a number of considerations, including cost and the mitigation measures that are ultimately imposed with respect to each of the alternatives.

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DATA REQUEST

- 3. When will the applicant choose which cooling system will actually be used with Unit 7?***

RESPONSE

The Applicant would select the cooling system prior to detailed design of the project.

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BACKGROUND [4 AND 4.1]

The Cooling Tower System Amendment ("Amendment") does not state when construction of the proposed recycled water cooling facilities would begin, and it proposes locating these facilities on site land that might be used for construction and/or heavy equipment maneuvering during

major repair or upgrade of Unit 3. However, the ISO expects installation of the Unit 3 SCR by the second quarter of 2005.

DATA REQUEST

4. *Please indicate when construction of the recycled water wet/dry cooling system would begin and end.*

4.1. *Please explain why this construction schedule will not conflict with or delay the pollution control retrofit of existing power plant Unit 3.*

RESPONSE

A number of unresolved matters would affect the commencement of construction, such as the date of approval of the project. Until such matters are resolved, it is impossible for the Applicant to determine when construction of Unit 7 would commence. The retrofit of Unit 3 is mandated by applicable air pollution control regulations, and must be completed. The timing associated with the retrofit of Unit 3 is one of the factors that may affect the construction schedule of Unit 7.

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BACKGROUND [5]

Very few contractors build hybrid cooling systems.

DATA REQUEST

5. *Will the availability of those contractors affect the construction schedule?*

RESPONSE

No.

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BACKGROUND [6]

The proposed once-through cooling system would cool Units 3 and 7, but the proposed recycled water alternative would serve only Unit 7. As the Amendment acknowledges, once-through cooling of Unit 3 causes impacts. The Unit 3 cooling system NPDES will be reviewed in the near future. On June 26, 2003 the National Marine Fisheries Service's Essential Fish Habitat Consultation recommended investigation of an upland cooling system for Unit 3 as well as Unit 7, and stated that failure to investigate this possibility now could result in its preclusion in the future. Indeed, proposed water piping, treatment and storage and wet/dry cooling facilities for Unit 7 would be near Unit 3, to the west and northwest of Unit 3. The Facility Description, Amendment, and AFC fail to discuss this potential project impact.

DATA REQUEST

6. *Please provide an engineering evaluation of how the Project could accommodate an alternative to once-through cooling for both Unit 7 and Unit 3, including options for a single system and separate systems.*

RESPONSE

Please see the Applicant's Objection to Intervener CBE's Second Set of Data Requests filed August 18, 2003.

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BACKGROUND [7 through 9]

The Facility Description states that existing fuel tanks 3 and 4 are no longer required for fuel storage and would be converted to storage tanks for recycled water. However, Mirant has previously stated that these tanks must store backup fuel, and that the Independent System Operator (ISO) requires this "dual fuel" capability. Further, neither the Amendment nor the AFC provides adequate information regarding the historic and existing uses of the tanks for review of the potential impacts that may result from the proposed tank conversion.

DATA REQUEST

7. *Why does Mirant believe that tanks 3 and 4 will not be needed for fuel storage?*

RESPONSE

Potrero Unit 3 is currently scheduled to receive a Selective Catalytic Reduction (SCR) retrofit in late 2004 as required by the California Independent System Operator (CAISO) in order to allow Unit 3 to operate within the new air emissions guidelines of BAAQMD Rule 9-11. The SCR is only effective with natural gas fuel and would be rendered inoperable if run with a liquid petroleum fuel. As a result, the plant will no longer have a dual fuel capability.

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DATA REQUEST

8. *Please provide any and all documents that show ISO will approve tank conversion.*

RESPONSE

Application to approve this change will be made to the CAISO in the near future.

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DATA REQUEST

- 9. Please describe the historic and present average and maximum oil usage rates in Unit 3, and the historic and present average and maximum amounts of oil storage in each tank.**

RESPONSE

Please see the Applicant's Objection to Intervener CBE's Second Set of Data Requests filed August 18, 2003.

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BACKGROUND [10]

The Amendment proposes to convert tanks 3 and 4 from fuel storage to cooling system use. However, Tank No. 5 would continue to store fuel for peaking units 4, 5 and 6, and Tank No. 5 is situated between tanks 3 and 4. The Amendment does not discuss the possibility of converting tank 3 or 4 to fuel storage for units 4-6, thereby opening up space now used by contiguous tanks (e.g., tanks 3 and 5 or tanks 4 and 5) for use in a cooling alternative.

DATA REQUEST

- 10. For each tank used for No. 6 fuel oil (tank numbers 3 and 4) please provide a conceptual engineering analysis of the steps that would be necessary to use the tank to store No. 2 fuel oil and feed this fuel to peaking units 4, 5, and 6.**

RESPONSE

Please see the Applicant's Objection to Intervener CBE's Second Set of Data Requests filed August 18, 2003.

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BACKGROUND [11]

Mirant has previously stated concerns about space on site for cooling system alternatives and visual blockage. The Amendment does not provide the tank dimensions.

DATA REQUEST

- 11. For each tank (3, 4, and 5) please provide: (a) its height in feet; and (b) dimensions in feet of land used for the tank and its secondary containment, piping, access, and other nearby space not available for a cooling system while it stores fuel.**

RESPONSE

The Cooling Water Amendment only discusses Tanks 3 and 4, which would be converted to cooling water storage. The tank dimensions are as follows:

	<u>Tank 3</u>	<u>Tank 4</u>
Tank Height	48 feet	65 feet (at peak)
Containment Wall Height	29 feet	48 feet
Tank Diameter	157 feet	167 feet
Containment Wall Diameter	232 feet	200 feet

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BACKGROUND [12]

The Facility Description states that Pier 80 would be the preferred off site construction laydown area. The Amendment does not discuss the reasons for this statement except for mentioning that Pier 80 has adequate nearby space. However, space and distance are not the only factors to consider in site preference.

DATA REQUEST

- 12. Please discuss Mirant's rationale for concluding that Pier 80 is the preferred site for additional off site laydown area.**

RESPONSE

When evaluating potential off-site laydown areas, adequate space and distance from the construction site are the overwhelming considerations. These are the two factors that led the Applicant to conclude that Pier 80 was the preferred offsite laydown area.

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BACKGROUND [13]

The Facility Description states that as compared with Pier 80, Pier 96 was considered the "worst case" for selection of new construction laydown area off site.

DATA REQUEST

- 13. Please explain why Pier 96 is the "worst case" site?**

RESPONSE

Because it is farther from the construction site than Pier 80, and therefore more emissions associated with transportation of materials between the laydown area and the construction site would be generated with the use of Pier 96 relative to Pier 80.

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BACKGROUND [14 through 16]

The Facility Description states that Mirant has not secured the availability of Pier 80 or Pier 96 for its proposed use of off site laydown area.

DATA REQUEST

- 14. When does Mirant Plan to secure the availability of laydown site?**

RESPONSE

Prior to commencement of construction, which, as discussed above, cannot be determined with precision at this time.

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DATA REQUEST

- 15. What type of legal arrangements, if any, are needed to secure availability of Pier 80?**

RESPONSE

Any number of legal arrangements, including a short-term or month-to-month lease, might be appropriate to secure the short-term use of Pier 80.

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DATA REQUEST

- 16. What type of legal arrangements, if any, are needed to secure availability of Pier 96?**

RESPONSE

Please see response to CBE Data Request 15. The same would be true for Pier 96.

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BACKGROUND [17 and 18]

Page 1-2 of the Facility Description states that if piers 80 and 96 cannot be made available other suitable nearby sites would be used. However, the Amendment does not identify these other sites or show that they are suitable or available.

DATA REQUEST

- 17. Please identify each "other suitable nearby sites" to which Mirant refers.**

RESPONSE

The Applicant has not identified any alternative possible offsite laydown areas other than Pier 80 and Pier 96. In the event that neither Pier 80 or Pier 96 were available, Applicant would seek alternative appropriate sites at that time.

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DATA REQUEST

- 18. Please identify the owner and describe the suitability of each other suitable nearby sites.**

RESPONSE

Please see the response to CBE Data Request 17.

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BACKGROUND [19]

Mirant's May 23, 2003 "Third Status Report" indicated that Mirant's decision to propose this Amendment is based in part on recently completed engineering studies related to "a comprehensive analysis of alternative cooling systems." However, neither studies including cooling tower engineering design details, nor studies including recycled water system design details, are included with the July 2003 Amendment. Further, it is not clear from the Amendment which, if any, previously docketed cooling system engineering studies might serve as a basis for the Amendment.

DATA REQUEST

- 19. Please provide all studies performed or commissioned by Mirant that address the design, engineering, and/or feasibility of alternative cooling systems.**

RESPONSE

A conceptual engineering analysis of cooling tower alternatives was prepared. Please refer to the Evaluation of Cooling Water System Alternatives set forth in Appendix E of the Biological Assessment for the Potrero Power Plant Unit 7 Project previously docketed in this matter, Docket Log Number 24252.

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BACKGROUND [20]

Wet/dry cooling tower evaluations made by Mirant analyzed alternative site plans, and suggested that new water storage facilities can fit on site without using existing fuel tanks. The Amendment proposes a wet/dry cooling tower consisting of 14 cells that would measure approximately 62 feet wide by 673 feet long by 69 feet tall. However, the previous design for this type of cooling tower provided by Mirant and docketed in this proceeding appears to differ from this proposal, consisting of 15 cells and measuring 74 feet tall.

DATA REQUEST

- 20. Please provide an evaluation of alternative site plans for the proposed wet/dry cooling tower.**

RESPONSE

Given existing and future space constraints on the Potrero Power Plant site, the Applicant believes that the proposed site plan, with possible minor adjustments, is the only feasible configuration for the proposed cooling tower. To the extent that the current proposal differs from concepts that were presented earlier in the proceedings, the differences are the result of more refined analysis, and are not material in nature.

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BACKGROUND [21 and 22]

The Amendment proposes new treatment facilities. It proposes to use aluminum sulfate and sodium hydroxide addition followed by aeration, then further treatment and membrane filtration in membrane bioreactor basins then disinfection by ultraviolet light followed by chlorine addition. It proposes two trains of aeration and membrane bioreactor basins discharging to a single UV disinfection structure. Some basin and structure sizes are given. However, the Amendment does not identify the specific equipment that would be used or provide any detailed treatment process diagrams. Further, other treatment and disinfection system options exist. Membrane bioreactors are relatively new technology. The Amendment does not discuss alternative treatment technologies or treatment train configurations.

DATA REQUEST

- 21. Please provide detailed treatment process designs and diagrams for the proposed recycled water treatment system.**

RESPONSE

A design study of the recycled water delivery system, the Final Conceptual Design Report (CH2M Hill, April 2003), was undertaken at a conceptual design level. This study established the feasibility of the system and basic design parameters and conditions. This study is being provided together with these responses to data requests. To the extent that the conceptual design presented in the CH2M Hill study differs from the conceptual design presented in the AFC Amendment, the differences reflect refinements to the conceptual design prepared by CH2M Hill, and the AFC Amendment controls.

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DATA REQUEST

- 22. Please provide detailed treatment process designs and diagrams for any alternative treatment systems evaluated by Mirant.**

RESPONSE

In addition to the proposed treatment system, the Applicant also considered a trickling filter and a biological aeration filter. These alternatives are discussed in the CH2M Hill conceptual design.

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BACKGROUND [23[A]]

Only one route from the Southeast Water Pollution Control Plant to the Potrero site is described in the Amendment for the proposed 18-inch-diameter secondary effluent pipeline. The same is true for the proposed 8-inch-diameter blowdown return pipeline, and the proposed 4-inch-diameter sludge return pipeline. There appear to be other technically feasible options for pipeline routes, however, the Amendment does not discuss whether or not Mirant considered any such alternative routes.

DATA REQUEST

- 23[A]. Please provide your evaluation of any alternative pipeline route or routes between the power plant and sewage plant considered by Mirant, including any design engineering, diagrams and/or maps of such alternatives.**

RESPONSE

During conceptual design of the pipeline between the SEWPCP and the Potrero Power Plant site, alternative pipeline routes were considered in addition to the preferred route described in the Amendment. One alternative considered was to continue the pipeline on Indiana Street between 26th and 23rd Streets, where it would turn east along 23rd Street to the Potrero Power Plant site. This was an alternative to using 26th and Tennessee Streets in this portion of the pipeline. Another alternative was to follow a different route from the preferred alignment between Davidson Avenue and Cesar Chavez Street. The preferred route is to use an existing overflow structure within which to construct the pipeline. The alternative in this portion of the route would have trenched the entire alignment between these points, following an existing 66-inch sewer. This would have involved an additional 1,300 feet of trenching.

The alignment and construction methods selected minimize trenching and minimize interference with utility and sewer lines in the area. The Final Conceptual Design Report (CH2M Hill, April 2003), is being provided together with these responses to data requests.

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BACKGROUND [23[B]]

The water balance given in Table 2-3 and corresponding Figure 2-5 shows that blowdown from evaporative coolers A and B and from the turbine boiler building clean drains is included in total blowdowns to the Southeast Water Pollution Control Plant given in line 107 of the table. However, Table 2-3 does not include a separate line for blowdown from the cooling tower to the Water Pollution Control Plant, and Figure 2-5 fails to indicate clearly the apparent addition of cooling tower blowdown to line 107 of the table. Thus, the water balance information does not clearly indicate what portions of these different blowdown streams are directed to the new 8-inch blowdown return pipeline or the sanitary sewer under the various conditions shown in the cases given in Table 2-3. Further, the water balance does not appear to include all reasonably foreseeable operating and weather conditions.

DATA REQUEST

23[B]. Please provide a revised water balance description that indicates separately the amounts of blow down from the cooling tower, evaporative coolers A and B, and turbine boiler building clean drains entering the new blowdown return pipeline versus the sanitary sewer under various operating and weather conditions.

RESPONSE

The amounts of blowdown in gpm from the cooling tower, evaporative coolers A and B, and turbine boiler building clean drains entering the new blowdown return pipe to the SEWPCP at the various operating and weather conditions presented in Table 2-3 of the Amendment would be as follows:

Source	Case 1 – Avg Full Load		Case 2 – Summer with Evap On		Case 3 – Summer with Evap., SF and PA	
	Avg./Day 24 hr avg.	Max/Day	Avg./Day 24 hr avg.	Max/Day	Avg./Day 24 hr avg.	Max/Day
Evaporative Coolers A Blowdown	0	0	6.25	12.50	6.25	12.50
Evaporative Coolers B Blowdown	0	0	6.25	12.50	6.25	12.50
Turbine Boiler Building Clean Drains	22	76	22	76	22	76
Cooling Tower Blowdown	647	647	647	647	647	647
Note: All values are in gallons per minute (gpm).						

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BACKGROUND [24]

Comparison of lines 73, 78, 79, 102 and 107 in the water balance given in Table 2-3 and Figure 2-5 appears to indicate that evaporative loss from the cooling tower remains constant during different weather and operating conditions. Further, the water balance in the table and figure does not include a line indicating water loss to the atmosphere from the cooling tower, although such lines are included for evaporative coolers A and B and for the Unit 7 combustion turbines during power augmentation.

DATA REQUEST

24. *Please provide a revised water balance description that clearly indicates the amounts of water loss from the cooling tower to the atmosphere under various operating and weather conditions.*

RESPONSE

The anticipated evaporation loss from the wet/dry cooling tower under the conditions indicated are as follows:

Condition	Evaporation Loss from Wet/Dry Cooling Tower (gpm)
Summer (80°F ambient air, 40% relative humidity)	2,580
ISO (59°F, 60% relative humidity)	1,996
Winter (35°F, 50% relative humidity)	1,176

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BACKGROUND [25]

Information in the Amendment suggests that the recycled water treatment system and cooling tower may operate at a constant flow rate that never varies. Lines 100 through 106 and line 108 of the water balance in Table 2-3 each have the same average and maximum flow rate under all conditions and these flows appear to be at or near the unit design capacities given in the Amendment. Although it is common and may be desirable to vary flows in some of these systems, it is not clear from the Amendment that the proposed design has this capability.

DATA REQUEST

- 25. For each pump, pipeline, and treatment unit in the recycled water system, and for the proposed cooling tower, please provide the full range of flow that the unit is designed to accommodate effectively and the flow rate that is planned under various foreseeable operating conditions.**

RESPONSE

The design information being sought by this data request relates to information that would be collected during the engineering design phase of the project. The anticipated flow rates that the pumps, pipes and treatment unit would need to be capable of meeting are given in the water balance table, Table 2-3. The circulating water flow to the wet/dry cooling tower is estimated to be either 50% or 100%. In general, for the other equipment that would be installed, the actual operating capacities are estimated to vary from 25% to 100% of the rated capacity.

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BACKGROUND [26]

Biological water treatment systems can lose their effectiveness if the supply of influent waste water nutrients that sustain a healthy population of organisms in the treatment system is disrupted. Such treatment systems typically include design elements that anticipate the potential for temporary disruption of sewage inputs. However, the Amendment does not indicate whether or not the proposed recycled water treatment facility includes such design elements.

DATA REQUEST

- 26. Please provide treatment system design specifications demonstrating that the proposed recycled water treatment facilities include design elements that will protect the system from loss of treatment efficiency should nutrient supply be disrupted temporarily.**

RESPONSE

The Recycled Water Treatment Facility would remove ammonia and phosphorus from the Southeast Water Pollution Control Plant secondary treated effluent to minimize cooling tower operating costs. Ammonia and phosphorus can be tolerated in the cooling tower, but the chemical treatment costs for operating the cooling tower would be significantly higher.

The Recycled Water Treatment Facility would use a biological treatment process (nitrification) for the oxidation of ammonia as well as a physical chemical treatment process for the removal of phosphorus.

Biological nitrification processes may be susceptible to process disruption, because the clarifiers used in a conventional nitrification process may be subject to upset. The clarifiers are used to separate out the biological solids. If the clarifier is not properly designed, the biological solids may be washed out of the clarifier at high or unsteady flow rates. If this occurred, it would take

several weeks for the biological nitrification process to return to normal. It is also well known that clarifiers operate best when the process streams are at steady state.

In the installation at Potrero PP, the proposed biological nitrification process would be more resistant to disruption, because clarifiers would not be used. Instead, the nitrification process would incorporate a membrane separation process. The membrane separation process can tolerate variable flow conditions. The membrane separation process is also better at retaining biological solids so that the nitrification process would operate smoothly even under variable process flows.

The treatment processes proposed to be used at the Recycled Water Treatment Facility do not require nutrients.

The proposed treatment facility would have multiple process trains. Spares would be installed for critical equipment. This proposed system would allow for operation of the treatment facility at flows ranging from 25% to 100% of design capacity. Intermittent operation caused by events such as a power failure, would generally not affect operations so long as the disruption is not longer than 8 hours.

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BACKGROUND [27]

Surge protection is typically an important consideration in the design of water treatment systems. The Amendment does not state whether or not the design criteria call for use of the proposed on site treated water Storage tanks for surge protection.

DATA REQUEST

- 27. *Please indicate whether or not the design criteria for the proposed recycled water facilities call for the use of tanks 3 and 4 for surge protection.***

RESPONSE

Tanks 3 and 4 are to be used to store treated water. The tanks are to be used if the flow from the Southeast Water Pollution Control Plant is interrupted. Since the Southeast Water Pollution Control Plant is a key City asset, it is expected that any flow interruption would be minimized for general health and safety.

Surge protection is not considered a problem because the flow to the Recycled Water Treatment Facility from the Southeast Water Pollution Control Plant is a very minor part of the total effluent flow from the plant.

It may be possible that Tanks 3 and 4 will be used for surge protection. This scenario would probably occur in an attempt to optimize plant operations rather than out of concern for surge protection.

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BACKGROUND [28]

Mirant has previously expressed concern over the difficulty of providing adequate water storage capacity for a cooling tower when the Southeast Water Pollution Control Plant is out of service or the secondary-treated effluent supply to the Potrero plant is otherwise disrupted for a number of days. The AFC indicates that Tank No. 3 has a fuel oil storage capacity of 6,930,000 gallons and Tank No. 4 has a fuel oil storage capacity of 10,500,000 gallons. However, the Amendment does not state their water storage capacities. Further, tank capacity could be affected by removal of oil heating equipment during refurbishing for water storage, but the Amendment does not indicate whether or not this equipment will be removed from tanks 3 and 4.

DATA REQUEST

28. Please provide the projected water storage capacities of tanks 3 and 4.

RESPONSE

A gallon is a volumetric measure and so a gallon of water and a gallon of fuel oil are identical in volume. As a result, the listed fuel oil storage capacities of tanks 3 and 4 are also the water storage capacities. The fuel oil heating coils take up very little space and their removal would not have a significant impact on tank capacities.

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BACKGROUND [29]

The Project Description estimates the initial capital cost of equipment plus installation for the proposed wet/dry cooling system at \$74 million. However, a previous conceptual engineering analysis for Mirant by Sargent & Lundy that is dated November 27, 2001 estimated the initial capital cost of equipment plus installation at about \$50 million without labor adjustment and approximately \$55 million with labor adjustment cost. Although the difference between these estimates is approximately \$19 million, or a 35% increase, the Amendment does not explain this difference.

DATA REQUEST

29. Please provide a detailed capital cost estimate for the proposed wet/dry cooling system that explains why the capital cost is greater than that estimated by Sargent & Lundy in 2001.

RESPONSE

The cost development is based on Sargent & Lundy's proprietary cost data base. The capital cost estimate for the proposed wet/dry cooling system (tabulated on Table 2-1 of the Cooling System Amendment) increased as compared to the 2001 estimate as a result of three main factors: (1) using a more compact Waste Water Treatment System design resulting in higher capital cost; (2) using a revised plume design point on the wet/dry tower for further plume visibility frequency reduction resulting in higher capital cost; and (3) using recently published higher productivity multiplier resulting in higher labor cost.

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BACKGROUND [30 and 31]

Mirant estimates "additional cost impacts" of the proposed wet/dry cooling system at approximately \$8.6 million. Footnote 2 of Table 2-1 indicates that this additional cost represents: "Equivalent Capital Cost over plant life, above once-through cooling system cost, includes the economic impact due to O&M, replacement energy, heat rate difference, and capacity." Sargent & Lundy's conceptual engineering analysis for Mirant in 2001 does not appear to include estimates of these costs, and the Amendment does not provide further explanation of them.

DATA REQUEST

- 30. Please provide a breakdown of the "additional cost impacts" estimated for each category in footnote 2 of Table 2-1.**

RESPONSE

The "additional cost impacts" is a result of higher heat rate and lower MW output in using the wet/dry cooling system as compared to the once-through cooling system, which would result in additional cost impacts from the increases of fuel consumption (\$4,840,000), reduction in megawatt output (\$1,590,000), and replacement energy loss (\$2,170,000). Note that the footnote for Table 2-1 of the AFC Amendment should read as follows: Additional cost impacts for the wet/dry cooling system include the equivalent capital cost for increased fuel consumption, reduction in megawatt output, and replacement energy loss relative to the once-through system.

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DATA REQUEST

- 31. Please provide estimates of the difference in replacement energy, heat rate, and capacity relative to once-through cooling in megawatts, Btu or other commonly-used energy units.**

RESPONSE

The net output difference used in calculating the replacement energy costs and the capacity costs was 3.7 MW (higher output for the once-through case). The heat rate difference used in the economic analysis was 50 Btu/kWh (lower heat rate for the once-through case).

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BACKGROUND [32]

The Project Description states that "a warehouse and some mobile trailers onsite may need to be relocated during the construction period to allow for construction equipment maneuverability and potential onsite laydown." However, the Amendment does not discuss where these facilities might be relocated.

DATA REQUEST

- 32. *If the warehouse and trailers discussed on page 2-6 of the Amendment need to be relocated during construction, please identify the site or sites to which Mirant would move them.***

RESPONSE

The final location of these facilities is to be determined during final site design, and in light of on-site construction needs. The trailers are used as a personnel assembly and meeting area. These temporary trailers would be relocated to another part of the Potrero PP site and hooked into existing utilities. The warehouse would be located so as to not interfere with construction or generation requirements.

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BACKGROUND [33 AND 34]

Mirant proposes to install an effluent pump station and three turbine pumps outside the Potrero power plant site, near the Flynn Pump Station and adjacent to the Southeast Water Pollution Control Plant. However, the Amendment does not discuss ownership of this site or whether it has secured the availability of this site for the project.

DATA REQUEST

- 33. *Please identify the owner of the land needed for the proposed effluent pump station.***

RESPONSE

The proposed effluent pump station site on Davidson Avenue adjacent to the Flynn Pump Station is owned by the City and County of San Francisco.

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- 34. *What type of legal arrangements, if any, are needed to secure availability of this land?***

RESPONSE

It is not clear at this stage of discussions with the City and County of San Francisco (CCSF) that the Applicant would be required to "secure availability" of the site of the effluent pump station. It may be that the pump station, including the land on which it would be located, would be owned and operated by the CCSF.

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BACKGROUND [35]

Mirant proposes to install new pipelines under portions of Davidson Avenue and Rankin, Cesar Chavez, Indiana, 26th, Tennessee, 23rd, and 3rd streets in San Francisco and within existing pipe trenches, galleries, and overflow structures on property owned by the City and County of San Francisco. The Amendment does not discuss how Mirant might secure permission for siting and constructing these pipelines.

DATA REQUEST

35. *What type of legal arrangements, if any, are needed to secure availability of this land?*

RESPONSE

It is not clear at this stage of discussion with CCSF what type of legal arrangement, if any, would be required to construct the pipelines.

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BACKGROUND [36]

The amendment states that storage tanks 3 and 4 will no longer be needed for fuel storage. This suggests that they might be closed and removed, allowing a significant portion of the site to be cleaned up before it is dedicated to other uses in the near future. However, the Amendment does not analyze impacts of the proposal to convert the tanks on these remediation, land use, and cooling system design opportunities.

DATA REQUEST

36. *Please describe the steps necessary to decommission and remove these existing fuel tanks before constructing new facilities.*

RESPONSE

Please see the Applicant's Objection to Intervener CBE's Second Set of Data Requests filed August 18, 2003.

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BACKGROUND [37 and 38]

The Amendment discusses Mirant's proposal to reduce projected operation of Unit 7 generation and says that the effect of this new projection will be to lower projections of certain air pollutant emissions. However, the Amendment, and the July 11, 2002 letter referenced by the Amendment, do not describe the timing of proposed generation in sufficient detail to determine time-sensitive impacts on air quality, transmission, Hunters Point plant closure and other relevant factors for review.

DATA REQUEST

- 37. *Please provide a detailed projection of the generation pattern, including the number of hours per year that Unit 7 will operate at each generation level.***

RESPONSE

Please see the response to SAEJ/OCE Data Request 25 for a discussion of the changes made to the annual operating hours of Unit 7 and the hours of duct burner operation.

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DATA REQUEST

- 38. *Please provide a technical analysis supporting this change in the generation projection, including analysis of seasonal and duct firing issues.***

RESPONSE

Please see the response to SAEJ/OCE Data Request 25 for a discussion of the changes made to the annual operating hours of Unit 7 and the hours of duct burner operation. A seasonal analysis is not a requirement of the BAAQMD regulations, as it is in some other areas of the state, so it was not a part of the analysis.

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BACKGROUND [39]

The Amendment points to a discrepancy between source tests results to suggest deferral of rigorous investigation into Mirant's new projection of reduced particulate matter (PM) emissions from Unit 7 at the same time that it analyzes impacts from new cooling tower PM emissions. The Amendment notes that "source test data from other similar power plants are becoming increasingly available." However, this source test information is not provided or discussed in adequate detail by the Amendment.

DATA REQUEST

- 39. Please provide complete source test reports that document test methods and all quality assurance/quality control data for all particulate matter source tests referred to in the statement on page 8.1-7 that "source test data from other similar power plants are becoming increasingly available."**

RESPONSE

The Applicant does not have any reports responsive to this request.

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DATA REQUEST

- 40. Please include all such documents for each source test referenced in Attachment 2 of your July 11, 2002 letter cited in footnote 1 of the air quality section, as well as all additional source tests referenced by this statement.**

RESPONSE

Please see the Applicant's Objection to Intervener CBE's Second Set of Data Requests filed August 18, 2003.

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BACKGROUND [41]

Mirant previously provided analyses by URS and Sargent & Lundy that estimate particulate matter (PM) emissions from a wet/dry cooling tower using gray water at 14-18 tons per year, and 10.8-12.7 tons per year, respectively. However, the Amendment estimates PM emissions from the proposed cooling tower at 9.2 tons per year. Mirant has reported results from PM source tests of other generating units, but the Amendment does not report any such source test results for cooling towers.

DATA REQUEST

- 41. Please identify and provide results from any and all particulate matter source tests of other wet/dry cooling towers using gray water.**

RESPONSE

Please see the Applicant's Objection to Intervener CBE's Second Set of Data Requests filed August 18, 2003.

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BACKGROUND [42]

The analysis of particulate matter (PM) emissions in the Amendment estimates that a mist eliminator system will capture all but five ten-thousandths of a percent of the circulating cooling water. The emissions estimate is sensitive to potential error in this estimate of mist eliminator system efficiency. If mist eliminator efficiency decreases by only two ten-thousandths of a percent (0.0007 instead of 0.0005 percent drift) then cooling tower PM emissions increase by 40%. However, the Amendment does not discuss or reference any technical support for this 0.0005 percent drift estimate.

DATA REQUEST

- 42. *Please identify the source of the drift estimate that Mirant used in the Amendment and provide any documentation Mirant obtained for this estimate.***

RESPONSE

The drift rate is entirely consistent with recent best available control technology (BACT) determinations for cooling towers made by the CEC and by BAAQMD. The Los Medanos Energy Center, Delta Energy Center, and the Metcalf Energy Center are or will be equipped with drift eliminators with a guaranteed drift rate of 0.0005%. Written guarantees from the supplier of the Potrero Unit 7 cooling tower will not be available until after an order is in place.

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BACKGROUND [43 and 44]

Although the estimate of drift rate is important to the accuracy of the cooling tower particulate matter emissions estimate, the Amendment does not provide adequate engineering and operations data to determine if the proposed design will achieve the estimated drift rate.

DATA REQUEST

- 43. *Please provide a detailed description of the engineering design and operation of the cooling tower and mist eliminator, including manufacturer's specifications and design drawings.***

RESPONSE

Detailed plans and specifications for the drift eliminator are not available at the present time. Please see the response to CBE Data Request 42.

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DATA REQUEST

- 44. Describe how this design and operating scheme will achieve the estimated drift rate.**

RESPONSE

Detailed descriptions of the operation and performance of the drift eliminators are not available at this time. Please see the response to CBE Data Request 42.

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BACKGROUND [45]

Circulating cooling water concentrations of constituents that will be emitted as particulate matter cited in the Amendment are based in part on its estimate of the proposed recycled water treatment system's removal efficiency. However, the Amendment does not discuss or reference the evidence and analysis supporting its estimates of pollutant concentrations in the recycled water treatment system effluent, or provide engineering details or vendor information supporting these estimates.

DATA REQUEST

- 45. Please provide engineering analysis, vendor information, and measurements from similar systems in operation elsewhere to document your estimate of the recycled water treatment system effluent quality, addressing all pollutants measured in Southeast Water Pollution Control Plant effluent that have the potential to form components of particulate matter.**

RESPONSE

Please see the Applicant's Objection to Intervener CBE's Second Set of Data Requests filed August 18, 2003.

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BACKGROUND [46]

Data presented in the Water Resources Section suggests levels of particulate matter (PM) precursors vary in the cooling tower water blowdown, with total suspended solids (TSS) ranging three-fold in concentration. Variability in on site water treatment system, water delivery system, and cooling tower operations may further affect the amounts of contaminants in the cooling water and cooling tower releases. However, the Project Description does not include adequate information to determine the range of pollutant releases.

DATA REQUEST

- 46. Please provide a quantitative estimate of variability in TSS, PM and other pollutants in the cooling tower water, blowdown, and emissions, based on a detailed analysis of available system engineering, operating, and chemistry data.**

RESPONSE

The variability of the concentrations of the materials in the cooling tower water would not cause the estimated PM emissions from the cooling tower to be exceeded. The quantitative estimate of the variability of total suspended solids (TSS) is provided in Table 8.14-1 and again in slightly different format in Appendix C1, second page. Note that the TSS value in the makeup water is 1 milligram per liter (mg/L) and that the TSS level after five cycles of concentration is given as 5 mg/L to 15 mg/L. Five cycles of concentration would increase 1 mg/L to 5 mg/L. Therefore, the factor of three mentioned by the commentor in the background section immediately preceding this data request is entirely conservative, and that conservatism is already accounted for in the estimation of the potential for the cooling tower to emit PM as follows. The high end of the TSS range (15 mg/L) was added to the maximum total dissolved solids (TDS) concentration (7,000 mg/L) and their sum (7,015 mg/L) was used to calculate the potential PM emissions from the cooling tower (see Appendix A1, last page). It is foreseen that the final regulatory approval of the Unit 7 project will contain a condition specifying the total allowable solids content of the water in the cooling tower sump, and periodic monitoring of this concentration. This condition will ensure the PM emissions from the cooling tower will stay below the levels that were used in the air quality impact analysis.

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BACKGROUND [47]

Estimates in Table 8.14-1 suggest that, taken together, the sum of the concentrations of calcium, magnesium, sodium, potassium, chloride, sulfate, silica, TSS, TDS, copper and zinc in the cooling tower water is nearly double the sum of the concentrations of TSS and TDS alone. Each of the other constituents has been found in particulate matter. However, information in Table 8.1-3 suggests that only the concentrations of TSS and TDS were used to calculate cooling tower particulate matter emissions. The Amendment does not discuss any evidence that the other constituents would not be found in particulate matter emitted from the tower. Further, other contaminants may be found in sewage effluent that might contribute to particulate matter emissions from the tower.

DATA REQUEST

- 47. Please discuss in detail your rationale for excluding other constituents of the cooling water from your particulate matter emissions estimation, analyze any alternative estimation methods that could address other constituents, and explain why Mirant believes its emissions estimate is accurate without these other pollutants.**

RESPONSE

The concentrations of the constituent dissolved solids (calcium, magnesium, sodium, etc.) are already included in the total dissolved solids (TDS) concentration. To add the individual constituents to the total would be double counting; this is why the commentor arrived at a new "total" that was twice the total given. The calculations of the potential emissions of PM from the cooling tower do not require revision based on this comment.

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BACKGROUND [48]

In the past, Mirant expressed concern about biohazards from cooling tower emissions if recycled sewage effluent is used at the Potrero plant. The U.S. Environmental Protection Agency has identified biohazards including disease vectors as well as allergens among the potential health hazards from exposure to particulate matter. The proposed disinfection system could reduce, but could not completely eliminate, infectious organisms from the water released by the cooling system. Even adequately disinfected biological materials in the emissions may be associated with allergic effects. Further, numerous pharmaceutical chemicals and byproducts, synthetic hormones, and other biologically active substances have been measured in treated sewage plant effluents. However, the Amendment does not discuss the presence of these pollutants in the recycled water or estimate their emissions from the recycled water treatment facilities and cooling tower.

DATA REQUEST

- 48. Please identify and estimate emissions from the proposed cooling tower for all pathogens, allergens, estrogenic and other compounds with hormonal activity, and all other pharmaceutical and/or medicinal waste constituents that may reasonably be expected in the treated sewage proposed for delivery to Potrero.**

RESPONSE

Concerns over constituents in the recycled effluent are the basis for the addition of the on-site tertiary treatment system. Please see the response to SAEJ/OCE Data Request 35. The on-site tertiary treatment system would remove all the listed materials to such low levels that impacts from cooling tower emissions would be imperceptible.

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BACKGROUND [49 through 53]

The Amendment proposes to use off site laydown area at Pier 80 or Pier 96, discusses increased vehicle trips between the new laydown site and the Potrero plant, and proposes trenching and other construction for three new pipelines between the Potrero site and the Southeast Water Pollution Control Plant. These new construction activities are in addition to the project's proposed construction of the Hunters Point-Potrero ("AP-2") transmission cable. The Amendment does not make any quantitative estimate of emissions from the proposed new construction activities.

DATA REQUEST

- 49. *Please estimate potential particulate matter emissions from the proposed construction for the upland cooling system.***

RESPONSE

Please see "Project Site Construction Emissions" on page 8.1-4 of the Amendment for a discussion of potential PM emissions during on-site construction activities. PM emissions would be the same for either of the cooling system alternatives. PM emissions for the once-through cooling alternative are included in Section 8.1 of the original AFC. Please also see "Pipeline Construction Emissions" on page 8.1-4 of the Amendment for a discussion of potential PM emissions during pipeline construction activities. The three pipelines will be together in a common trench for most of their route. Emissions from pipeline construction are assumed to be equal to those emissions estimated for transmission line construction in the original AFC. PM emissions for the transmission line are included in Section 8.1 of the original AFC. Emissions during pipeline construction would be short-term, temporary and localized to the actual activity and would not combine with other construction emissions.

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DATA REQUEST

- 50. *Please estimate emissions from increased vehicle trips between the Potrero plant and each potential offsite laydown area.***

RESPONSE

Please see "Project Site Construction Emissions" on page 8.1-4 of the Amendment for a discussion of vehicle emissions. Vehicle trip emissions would not be the cause of the worst-case construction concentrations and would not contribute to the worst-case construction concentrations.

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DATA REQUEST

51. Please estimate emissions from dust entrained at each potential laydown area.

RESPONSE

Please see “Project Site Construction Emissions” on page 8.1-4 of the Amendment for a discussion of fugitive dust from the laydown area. The potential laydown areas are paved, so fugitive dust is not expected to be significant.

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DATA REQUEST

52. Please estimate emissions from trenching and associated pipeline construction activities.

RESPONSE

Please see “Pipeline Construction Emissions” on page 8.1-4 of the Amendment for a discussion of pipeline construction. Pipeline construction impacts will be very localized and similar to transmission line construction impacts. Transmission line construction impacts are included in Section 8.1 of the original AFC.

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DATA REQUEST

53. Please estimate emissions from traffic disruption including dust entrainment during disruption of normal traffic patterns.

RESPONSE

No traffic disruption to unpaved streets is anticipated. Any traffic disrupted from paved streets onto other paved streets would not generate significant additional amounts of dust.

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BACKGROUND [54]

The City and County of San Francisco has received ownership of four GE LM6000 combustion turbines and has secured financing for installation and operation of these power plants through a contract with the Department of Water Resources that provides for development of these power plants by mid 2005. San Francisco officials have indicated that three or four of these combustion turbines are likely to be sited in San Francisco near the Potrero substation. However, the cumulative effects discussion in the Amendment does not discuss these new power plants.

DATA REQUEST

- 54. Please provide a revised cumulative effects analysis that addresses the potential cumulative effects of the project with three or four city-owned LM6000 combustion turbines in operation and interconnected to the Potrero substation.**

RESPONSE

The City-owned LM6000 combustion turbines are not "probable future projects" as defined by the California Environmental Quality Act, and therefore there is no requirement to include them in a cumulative impacts analysis for Potrero Unit 7. Furthermore, it would be impossible to do so since no site has been identified for the City-owned turbines.

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BACKGROUND [55]

Polycyclic aromatic hydrocarbons (PAHs), mercury, and other persistent, bioaccumulative toxic pollutants would be emitted from fuel combustion in Unit 7, proposed facilities to treat Southeast Water Pollution Control Plant effluent, and/or the proposed cooling tower as a result of the project. Ample evidence exists to demonstrate that air emissions of these pollutants enter fallout to land and water surfaces, are carried by storm runoff to water bodies, and accumulate in aquatic sediment and food chains. PAHs, mercury, and other persistent bioaccumulative toxic pollutants have accumulated in San Francisco Bay in amounts that threaten biological resources, uses of water, and public health. However, the Amendment and AFC do not discuss this pollution pathway with respect to the project.

DATA REQUEST

- 55. *Please estimate PAH and mercury loading to San Francisco Bay via fallout from project-related air emissions on the Bay surface and via storm runoff carrying fallout from project-related air emissions on land including emissions from Unit 7 generation, gray water treatment, and cooling tower in your estimate.***

RESPONSE

All known or potential air toxics emissions from the operation of the Unit 7 project have been included in the health risk assessment, which included the direct inhalation pathway of exposure and other direct exposure pathways, with the result being a less-than-significant health impact. When the direct pathways are shown to have no significant impact as in this case, further investigation of other, indirect exposure pathways, such as fallout and runoff to the Bay, is neither meaningful nor required. The impacts from the indirect exposure pathways would be too low to significantly increase the health risk calculated from the direct pathways.

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BACKGROUND [56]

The Amendment summarizes results from a Health Risk Assessment in Tables 8.6-1, 8.6-2 and 8.6-3, and provides limited excerpts of documents in an appendix that appear to be excerpted from this Health Risk Assessment and a modeling report. The summary indicates that risk approaches a threshold for significance, but important technical information regarding the Assessment's analytical design, criteria, assumptions, pollutants and exposures screened are not given by the Amendment.

DATA REQUEST

- 56. *Please provide the Health Risk Assessment referred to in the Amendment's discussion of public health, and the full modeling report(s) excerpted in the Appendix.***

RESPONSE

Section 8.6 and Appendix C of the Amendment contain summaries of the health risk assessment (HRA) performed on the cooling tower and odor control system emissions only. Please see Section 8.6 Public Health and Appendix L in the original AFC for a complete discussion of the methodology used and supporting documentation for the HRA done for the gas turbines. Both HRAs used the same methodology. The HRA for the gas turbines was unchanged for the cooling tower amendment. However, the results of the HRA conducted for the gas turbines was supplemented by the HRA conducted on the cooling tower and odor control system, by simply adding the outcomes of the two. This is a conservative approach because the location of the maximum impact point of each of the two HRAs does not coincide. However, even with this conservative approach the resulting incremental excess cancer risk was 0.9 in one million, which is below the significance level of 1.0 in one million.

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BACKGROUND [57]

Table 8.6-2 presents estimates of hazardous air pollutant emissions from the proposed gray water treatment odor control system. This information suggests that only twelve hazardous air pollutants would be emitted. The effluent that would be treated is collected from approximately 80% of San Francisco. Other volatile pollutants are likely to be present at trace concentrations in the treatment system emissions. Even if data are lacking for a pollutant in the Southeast Water Pollution Control Plant effluent, influent tests and tests of other similar sewage systems can provide relevant information on that pollutant. However, the Amendment does not provide adequate supporting information to document that all relevant volatile pollutants are included in the health risk assessment.

DATA REQUEST

- 57. Please identify all volatile pollutants identified in analyses of: (a) influent to the Southeast Water Pollution Control Plant; (b) effluent from the SEWPCP; and (c) influent other U.S. sewage treatment plants, and provide the concentrations measured in SEWPCP effluent.**

RESPONSE

Please see the Applicant's Objection to Intervener CBE's Second Set of Data Requests filed August 18, 2003.

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BACKGROUND [58 through 61]

The Amendment estimates emissions from the proposed gray water odor control system but does not describe how these emissions may occur or provide engineering design specifications to verify the assumed emission rates. Further, even if proposed gray water treatment facilities are enclosed fugitive emissions still can occur, but the Amendment does not discuss fugitive emissions or indicate if they are included in the emissions estimate.

DATA REQUEST

- 58. Please provide detailed engineering design and operating data for all gray water treatment and odor control facilities proposed at the Potrero site.**

RESPONSE

Detailed design has not been completed.

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DATA REQUEST

- 59. Please identify all points of emission and estimate the emissions.**

RESPONSE

All emission points have been identified, and all emissions from these points have been quantified. There are two emission points: the cooling tower, and the odor control system vent.

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DATA REQUEST

60. Provide any and manufacturer's specifications for expected emission rates.

RESPONSE

Please see Appendix C1 of the Amendment for all available vendor information regarding emissions rates.

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DATA REQUEST

61. Please estimate fugitive emissions.

RESPONSE

There would not be fugitive emissions. Emissions would be controlled by negative air pressure within totally enclosed aeration basins. Vent air would be passed through the granular activated carbon bed for VOC abatement (see the odor control system drawings in Appendix B of the Application for Authority to Construct/Permit to Operate Cooling Tower Modifications [posted on the CEC website for this project: <http://www.energy.ca.gov/sitingcases/potrero/documents/index.html>]). Therefore, even if there would be a small opening in an enclosure, the negative pressure would draw outside air into the enclosure, rather than allowing inside air to leave.

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BACKGROUND [62]

The Amendment suggests that the proposed gray water and cooling water facilities are designed to maintain free chlorine at effective concentrations for disinfection in the treated makeup water and circulating cooling water, and that other chemicals would be added to the water to control corrosion and scale.

DATA REQUEST

62. Please indicate whether or not potential health risks due to the formation and release of chlorinated compounds from cooling water storage and use was included in your assessment of public health risks from the project.

RESPONSE

The health risk assessment did not include chlorinated compounds from the cooling tower. However, the health risk assessment included impacts from emissions of 1,1,1-trichloroethane, chloroform, methylene chloride and tetrachloroethylene from the odor control system. The constituents of the tertiary treated water in the cooling tower are primarily inorganic salts (see the response to SAEJ/OCE Data Request 3). Therefore, the organic species listed above are unlikely to become present in significant quantity as byproducts of chlorinating the cooling tower water.

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BACKGROUND [63]

The Amendment estimates the frequency of occurrence of visual plumes but does not provide adequate information about this potential impact. This potential impact can most effectively be assessed and reviewed through presentation of visual information. Mirant previously has provided simulations showing the site with wet/dry and dry cooling tower structures from key viewpoints, for assessment of such impacts. However, the Amendment does not provide such simulations showing the wet/dry tower plume expected to occur periodically as a result of the new cooling proposal.

DATA REQUEST

- 63. *Please provide visual simulations showing the expected, and maximum worst-case, visual plume from the proposed cooling tower from key viewpoints.***

RESPONSE

Please see the Applicant's Objection to Intervener CBE's Second Set of Data Requests filed August 18, 2003.

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BACKGROUND [64]

In 2001, Mirant concluded that there is insufficient space on site for an air cooled (dry cooling) alternative based on the assumption that space used for storage tanks 3 and 4 is not available for cooling systems. Mirant now proposes to use the tanks for wet/dry cooling. In addition, Mirant proposes using off-site laydown areas during construction. Mirant also has previously proposed repositioning the steam turbine and other parts of Unit 7 in a revised site plan that was not designed for a dry cooling system utilizing areas now occupied by existing fuel storage tanks.

DATA REQUEST

- 64. *Please provide an analysis showing whether or not there is sufficient space for dry cooling of Unit 7 if tanks 3 and 4 are removed, Unit 7 components are repositioned to optimize the locations of the cooling tower and steam turbine, and an off-site laydown area is available.***

RESPONSE

Please see the Applicant's Objection to Intervener CBE's Second Set of Data Requests filed August 18, 2003.

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BACKGROUND [65 and 66]

Mirant estimated costs of cooling alternatives, including dry cooling, in 2001. The Amendment includes a revised estimate of construction, operating, "additional" and total costs for wet/dry cooling of Unit 7 using recycled water.

DATA REQUEST

- 65. *Has Mirant performed or commissioned a revised estimate of construction, operating and total costs for dry cooling of Unit 7 since 2001?***

RESPONSE

No.

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DATA REQUEST

- 66. *If so, please provide this cost estimate.***

RESPONSE

Please see the response to CBE Data Request 65.

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BACKGROUND [67 and 68]

Mirant has previously identified potential concerns over view blockage from a dry cooling tower built from existing grade at the Potrero site, without excavation. The Amendment appears to propose construction of some wet/dry recycled water facilities partially below grade, but does not discuss this means to reduce visual impacts of a dry cooling alternative.

DATA REQUEST

67. *Has Mirant evaluated the use of excavation to free space for air flow under a dry cooling tower thereby reducing view blockage?*

RESPONSE

Cooling air is not available if the equipment is in a pit.

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DATA REQUEST

68. *If so, please provide this evaluation.*

RESPONSE

Please see the response to CBE Data Request 67.

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